

Lockheed Martin Space Systems
1111 Lockheed Martin Way
Sunnyvale, CA 94089



Exhibit E

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
OPERATING PROCEDURE

APRIL 7, 1987
AUGUST 6, 1987 (REVISION #1)

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS D/47-30

OPERATING PROCEDURE

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FORMAT FOR OPERATING PROCEDURES AND FORMS
HAZARDOUS WASTE OPERATIONS 0/47-30

3-28-87

TITLE BLOCK

The title block in the top left hand side of each procedure or form will be as follows:

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
(SECTION)
OPERATING PROCEDURE (OR FORM)

The SECTION entry will specify one of the following specific areas of operation:

WASTEWATER TREATMENT PLANT
BUILDING SYSTEMS
POND OPERATIONS
CONTAINERIZED WASTE FACILITY
RESTRICTED METAL WASTES
SORTING & SALES

(Note: BUILDING SYSTEMS area of operation includes all assigned responsibilities at process buildings in LMSC Facility 1, such as operation of hazardous waste tanks, diversion systems, etc.)

DOCUMENT CONTROL

The format for the document control block on the top right hand side of the form or procedure will be as follows:

Procedure (or Form) No.
Issue Date
Revision Date
Written By
Approved By

The procedure numbers will be a three digit number sequentially numbered for each area of operation as follows:

WASTEWATER TREATMENT PLANT (NO. 1XX)
BUILDING SYSTEMS (NO. 2XX)
POND OPERATIONS (NO. 3XX)
CONTAINERIZED WASTE FACILITY (NO. 4XX)
RESTRICTED METAL WASTES (NO. 5XX)
SORTING & SALES (NO. 6XX)

Form numbers will be the same as the procedures which define their use, e.g., the use of Form 102 will be defined by Procedure 102. If more than one form is defined by a single procedure, the forms will be further designated by letter, e.g., Form 102A, 102B, etc. The only exception to this numbering system will be

in the use of printed or stock LMSC forms such as manifests and shipping tags, or standard forms such as the UNIVERSAL HAZARDOUS WASTE MANIFEST. The LMSC form number will be included in the procedure when printed or stock forms are used.

The issue date is the original date of use for the procedure or form.

The revision date is the latest revision of the procedure or form. The revision date will be followed by the number of the revision in parenthesis, i.e., the first revision to the original form or procedure will be shown as date (1), the second revision as date (2), etc.

The original author of the procedure will sign the "Written By" space. Each time the procedure or form is revised, the author will sign "Written By" space, replacing the previous author's signature.

The procedure or form will be reviewed and approved by an authorized individual in O/47-10, Environmental Assurance. Each revision must be similarly reviewed and approved.

TITLE

The specific title of the form or procedure will be written and centered directly below the title block and document control sections. It is important to note that the title will always refer to the specific area of operation in the title block, e.g., if the title of a procedure is HAZARDOUS WASTE TANK OPERATION, and the area of operation is BUILDING SYSTEMS, the procedure or form covers tanks within Facility 1, not in the Wastewater Treatment Plant or other areas. The procedure or form number (in the example, a 2XX number) further defines the area of operation.

CONTENT

The body of each procedure will have a GENERAL section, describing the purpose or requirement for the procedure, followed by a PROCEDURE section for specific details and instruction.

PROCEDURE AND FORM CONTROL

A file for all master copies of procedures and forms, including all revisions, will be maintained by Hazardous Waste Operations, O/47-30.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING PROCEDURE

Procedure No. 101
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *Jim Fed*
Approved By: *W. Willard*

WASTEWATER TREATMENT PLANT OPERATIONS

INTRODUCTION

The following procedures for the operation of the Central Wastewater Treatment Plant are a part of Operating Plan submitted and approved by the Department of Health Services on March 10, 1987. The original six sections of the approved procedures have been consolidated into a single document, using the format developed for other Hazardous Waste Operation operating procedures. The only revisions to the six procedures are the change of organizational responsibility from Waste Control Operations, 0/45-51, to Hazardous Waste Operations, 0/47-30.

An addendum, Section VII of this procedure, has been incorporated to describe the applicable forms and, in some cases, procedures appertaining to the operation of the Wastewater Treatment Plant. Specifically, detailed procedures have been developed for the operation, monitoring, and transfers from the Facility 1 hazardous waste tanks.

I. FACILITY DESCRIPTION

The Central Wastewater Treatment Plant is located adjacent to B/175 and the Rinsewater Holding Ponds. The system is comprised of the following elements:

1. Transfer line from Facility 1 for process wastewater from Buildings 103, 150, 151, 159, 170, and 182. Connection is planned for Building 071.
2. Two storage tanks with a capacity of 13,000 gallons each.
3. Bulk raw material tanks for caustic soda and sulfuric acid, used for pH adjustment.
4. Day tanks for caustic soda and sulfuric acid, supplied from the raw material bulk tanks.
5. Feed tank for pH adjustment.
6. Treatment unit (Andco Environmental Systems) consisting of feed pumps, two electrochemical treatment cells, and control instrumentation.
7. Degassing tank.

8. Flocculant addition tank and pump.
9. Clarifier.
10. Sludge thickening tank.
11. Filter press.
12. Water collection tank following Clarifier.
13. Transfer piping to Rinsewater Holding Ponds.
14. Interconnecting piping, utility piping, and electrical service required for operation of the system.
15. Pad with secondary containment for all process tanks.
16. Area lighting.
17. Safety showers.
18. Alarms and malfunction shutdown instrumentation.

Complete process flow diagram (P & ID) on Drawing 100-B20U, Reg. No. B-23837-02.

II. SCOPE AND FUNCTION OF OPERATIONS

The Central Wastewater Treatment Plant is designed to receive and treat process wastewater from (currently) six buildings in Facility 1. Product from the treatment system are metal hydroxide sludges and sewerable water (meeting all City of Sunnyvale requirements for discharge).

Process wastewater is defined as wastewater generated from a chemical processing operation which is non-sewerable due to heavy metal content, or out-of-limit pH. Process wastewater is generated from the following:

1. Upset conditions in rinsing systems which activate diversion controls and divert the contaminated water from the rinsewater line discharging to the Holding Ponds into hazardous waste tanks at the individual buildings.
2. Spills from process tanks which activate the diversion controls directly, or divert the controls when the spill is washed down.
3. Direct dumps from process tanks to the building holding tanks.

Collection and transfer piping inside the process building and at the building waste control equipment is designed to provide segregation of process wastewater; only wastewater which acid,

base, or metal-bearing can enter the system. Water which can or may contain organic materials such as solvent are separately collected. The basic reason for this is to prevent contamination problems in the operation of the Central Wastewater Treatment Plant.

Process wastewater holding tanks are monitored daily, and, prior to transfer, evaluated for content and measure for volume. All transfers to the Central Wastewater Treatment Plant are manual, i.e., the valves into the Industrial Waste Line, normally kept locked, are unlocked, and the transfer pump is manually activated; the pump is shut off at the end of the transfer and the system is secured by closing and locking the valves. The system and locks are under the control of Hazardous Waste Operations, 0/47-30, and all transfers are made by Hazardous Waste Operations personnel.

The process wastewater Industrial Waste Line discharges into one of two storage tanks at the Central Wastewater Treatment Plant. The purpose of the evaluation of the holding tank at the building prior to transfer is only to insure the compatibility of the solution being transferred to material in the storage tank (and suitability for treatment).

Each storage tank has a capacity of 13,000 gallons. When a sufficient amount of material is accumulated on one tank to process through the treatment plant, the "receiving" function is switched to the other tank. Historical experience is that from 10,000 to 30,000 gallons of process wastewater are generated each week in Facility 1.

The accumulated "batch" in the storage tank is sampled and analyzed. This information is collected in order to (1) insure suitability for treatment, (2) provide a cross-check and material balance on process wastewater transferred from the buildings, and (3) provide input to a data base which, in conjunction with the treatment system operating data, will allow optimum operation of the system.

The treatment unit is designed to perform the following functions:

1. Adjust pH to a level of 7 to 9.
2. Convert hexavalent Chrome ($\text{Cr} +6$) to the trivalent form ($\text{Cr} +3$).
3. Precipitate all heavy metals as hydroxides.
4. Separate, by clarification, thickening, and filtration, all precipitated metal hydroxides from wastewater.
5. Produce sewerable wastewater effluent and disposable heavy metal hydroxide sludges.

The batch from the storage tank is recycled through the system, i.e., the effluent wastewater is returned to the batch storage tank, until the quality of the wastewater at the Clarifier overflow will insure that the Holding Pond discharge will meet sewer discharge limits. In the ponds, the treatment plant effluent is combined with rinsewater from Facility 1, and ultimately discharged to the City of Sunnyvale sewer.

III. TANK TRANSFERS FROM FACILITY 1

Wastewater is transferred from Facility 1 to the Central Wastewater Treatment Plant for processing and disposal. Transfers are made when holding tanks in Facility 1 reach approximately one half of their safe capacity or when storage capacity is needed to meet anticipated production of wastes. Maximum storage in any of the tanks is 5000 gallons.

1. The contents of the tank to be transferred are mixed and a representative sample is taken by D/47-10 for analysis.
2. A sample is evaluated for pH and approximate heavy metal content by Hazardous Waste Operations. These results are used to insure that the solution is compatible and treatable.
3. The total volume of the tank is measured using level indicators.
4. Sufficient storage tank volume to receive transfer and flush water at the treatment plant is verified.
5. Solution compatibility with contents of the storage tank at the treatment plant (if any) is verified.
6. Manual valves on the process solution transfer line are unlocked and opened.
7. Transfer pump is unlocked and activated.
8. When the transfer is complete, 300 gallons of rinse water is pumped, followed by sufficient plant air to flush the line.
9. Transfer pump is locked out and the transfer line valves are shut and locked, securing the system.
10. Verification of the volume of transfer is made at the treatment plant.

The keys for the valves and pump are available only to Hazardous Waste Operations, D/47-30, personnel. All transfers are made under the direct control and supervision of Hazardous Waste Operations personnel. All Hazardous Waste Operations personnel carry pagers for emergency communications.

IV. BATCH ACCUMULATION AND PREPARATION

1. Batches of wastewater transferred from Facility 1 are accumulated until the storage tanks contain approximately 10,000 gallons, or until the storage capacity is needed for anticipated transfers.
2. Before the wastewater is treated, the contents of the tank are recirculated and a representative sample is taken. Results of the samples are used to ensure ability to treat and to estimate process parameters such as cell current and total treatment time.
3. When one tank is to be treated, the other tank is used to receive any transfers. The tank being treated receives recycled effluent water from the treatment unit until the water meets sewerable standards.
4. At the completion of treatment, the storage tank is emptied by passage of the contents through the treatment unit and discharge to the Holding Ponds.

V. TREATMENT

Although the treatment unit is automatically controlled, certain treatment parameters are set by the operators. These parameters, such as current level and sludge pump rate, need only by approximate since the production of sewerable water is verified before discharge.

1. Sufficient reagent levels in acid, base, and polymer feed tanks are verified. If necessary, make up solutions are added.
2. Clarifier sludge pump is adjusted. If necessitated by large sludge volume in the thickening tank, filter press is activated.
3. Approximate cell voltage is established using manufacturer's recommendation and pretreatment analysis.
4. System controller is activated starting all process equipment automatically.
5. System is operated with the effluent from the water collection tank recycling to the storage tank until the clarifier overflow is visibly clear and the City of Sunnyvale sewer discharge limits are met, the major provisions of which are:
 1. pH limits 6 to 10.5.
 2. Total Chrome less than 1.7 ppm.
 3. Total Copper less than 2.0 ppm.

6. When the effluent at the water collection tank meets suitable limits, the effluent line to the Holding Ponds is opened and the treated solution is discharged to the Holding Ponds.

VI. POST TREATMENT TESTING AND DISCHARGE

1. Prior to discharge, a representative sample is drawn from the effluent stream at the water collection tank. The sample is evaluated for quality.
2. If sample evaluation indicates that the effluent is not sewerable, then the batch is not discharged. The batch is instead further treated, and Step 1 above is repeated.

VII. FORMS AND PROCEDURES ADDENDUM

1. The operational procedures for Facility 1 hazardous waste tanks are covered in Building Hazardous Waste Tank Operations, Procedure No. 201. The following forms are used for these tanks:
 1. Form 201A - Hazardous Waste Tank Inventory Log
 2. Form 201B - Hazardous Waste Tank Transfer Log (This form is used for transfers out of the building tanks, either into tank trucks or to the Wastewater Treatment Plant.)
2. A daily record, Form 101A, will be utilized for the monitoring of all Wastewater Treatment Plant liquid storage tanks. A copy of the form is attached to this procedure.
3. For each batch of process wastewater processed through the Wastewater Treatment Plant, Form 101B, Treatment Plant Batch Operating Log will be maintained. A copy of the form is attached.
4. Inspection procedures and forms for the Wastewater Treatment Plant are contained in Procedure No. 102.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING FORM

Form No. 101A
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *Ang. Teller*
Approved By: *Mike Willard*

WASTEWATER TREATMENT PLANT STORAGE TANK LOG

WEEK OF _____

	VOLUME IN GALLONS									
TANK DESCRIPTION	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY	
WASTE STORAGE #1										
Start Shift										
End Shift										
Consumption										
Transfer/Facility 1										
WASTE STORAGE #2										
Start Shift										
End Shift										
Consumption										
Transfer/Facility 1										
DAY ACID STORAGE										
Start Shift										
End Shift										
Consumption										
Makeup										
DAY CAUSTIC STORAGE										
Start Shift										
End Shift										
Consumption										
Makeup										
POLYMER STORAGE										
Start Shift										
End Shift										
Consumption										
Makeup										
HIGH LEVEL ALARM CHECK										
Waste Storage #1										
Waste Storage #2										
pH Adjust Tank										
Collection Tank										
SUMP LEVELS										
#1/#2										
Pumped Empty										
OPERATOR										

Form No. 101 B
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: Jimmy Ford
Approved By: Mr. Willard

Form No. 101 C
Issue Date: 6-1-87
Revision Date:
Written By: *Jay*
Approved By: *JAK*

This log is to be used on selected treatment batches to develop a data base for treatment parameters and time requirements. While it is a part of the Operating Record, the use of the form is optional.

DATE_____ BATCH NO. _____ VOLUME _____ OPERATOR _____

[illegible]

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING PROCEDURE

Procedure No. 102
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *John Lee*
Approved By: *W. L. Willard*

WASTEWATER TREATMENT PLANT INSPECTIONS

INSPECTIONS

All equipment is inspected according to the following schedule using the attached forms. Inspection forms and schedule are maintained at the Wastewater Treatment Plant. Any unsatisfactory condition is acted upon immediately. Notation of the problem, the action taken, and the expected completion date of any corrective action are included in the action/observation section of the inspection form. Additional notation of the remedy or repair made and the date completed is made upon completion. Any condition significantly endangering environmental or worker safety will be remedied before further operation of the equipment. All inspection forms are filed and maintained for three years.

INSPECTION OF TANK INTERIORS

The projected life span of all tanks in the treatment system is 20 years. No significant deterioration of any kind is anticipated during this period. Thus, a 2 year interval (biannual) inspection is adequate to detect any problems.

To accomplish this inspection, each tank is drained completely by pumping or opening the bottom drain (where provided). The interior is thoroughly washed using adequate volumes of tap water.

To inspect the larger tanks (storage tanks and the pH adjust tank), entry may be required. Any tank entry is treated as a confined space entry and must be supervised by Lockheed Safety and Industrial Hygiene. Provisions for this procedure include but are not limited to:

1. Supplied air breathing apparatus.
2. Harness and lifeline.
3. Standby personnel equipped with any emergency equipment.
4. All necessary personal protective equipment.

(For complete description see Lockheed Safety and Industrial Hygiene Standard No. 5.4, attached.)

Tank interior is examined visually for any significant deterioration such as cracking, abrasion, pitting, etc. Any significant problem is remedied before the tank is placed back in service. Each inspection is documented in writing including the following:

1. Date of inspection
2. Time of inspection
3. Name of inspector
4. Observations made
5. Date of any repairs or remedies
6. Nature of any repairs or remedies

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING PROCEDURE

Procedure No. 102
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *Jim Lee*
Approved By: *AKWillard*

WASTEWATER TREATMENT PLANT

INSPECTION SCHEDULE

MONITORING EQUIPMENT

Liquid Level Transmitters
pH Probes/Recorder

Operating Log
Monthly

SAFETY EQUIPMENT

Pagers
Absorbents
Drums
Shower and Eyewash
Eye Protection
Respirators
Self Contained Breathing Apparatus

Operating Form
Monthly
Monthly
Weekly
Monthly
Weekly
By LMSC Hazard
Control

Fire Extinguishers

By LMSC Fire
Department

Telephone
First Aid Supplies
Protective Clothing

Monthly
Monthly/After Use
Monthly/After Use

SECURITY EQUIPMENT

Fence
Gates
Warning Signs

Monthly
Weekly
Monthly

OPERATION AND STRUCTURAL EQUIPMENT

Tank Level
Pumps
Bases and Foundations
Protective Coating
Ramps
Sump Areas
Piping and Containment
Valves

Operating Logs
Weekly
Monthly
Monthly
Weekly
Operating Logs
Weekly
Monthly

TANKS

Seismic Restraints
Pipe Connections
Tank Shell

Weekly
Weekly
Weekly

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING FORM

Form No. 102 A
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *[Signature]*
Approved By: *[Signature]*

WASTEWATER TREATMENT PLANT WEEKLY INSPECTION FORM

OPERATOR _____ DATE _____ TIME _____

ITEM/PROBLEMS TO LOOK FOR	OK?	OBSERVATIONS/ACTIONS
RESPIRATORS Broken, dirty, missing cartridges		
GATES Damaged, missing locks barbed wire loose		
PUMPS AND HOSES No power, clogging, leaks		
RAMPS Cracks, erosion, uneven		
PIPING/SECONDARY CONTAINMENT Leaks, cracks, deterioration		
SEISMIC RESTRAINTS Corrosion, distortion		
TANK SHELL/PIPE CONNECTIONS Leaks, cracks, deterioration		
SHOWER AND EYEWASH STATIONS Access, clarity, flow		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
WASTEWATER TREATMENT PLANT
OPERATING FORM

Form No. 102 B
Issue Date: 9-15-86
Revision Date: 5-20-87
Written By: *James J. [Signature]*
Approved By: *W. L. Wilford*

WASTEWATER TREATMENT PLANT MONTHLY INSPECTION FORM

OPERATOR _____ DATE _____ TIME _____

ITEM/PROBLEMS TO LOOK FOR	OK?	OBSERVATIONS/ACTIONS
PH PROBES AND RECORDER Damage, signal, calibration		
ABSORBENTS Out of stock, low inventory		
DRUMS, LIDS, SEALS Out of stock, low inventory		
EYE PROTECTON EQUIPMENT Dirty, broken, out of stock		
TELEPHONE Operative, 117 Sticker on		
FIRST AID SUPPLIES Out of stock, low inventory		
PROTECTIVE CLOTHING Out of stock, low inventory		
FENCE Damage, gaps, loose wiring		
WARNING SIGNS Complete, legible, visible		
BASES AND FOUNDATIONS Erosion, cracks, deterioration		
PROTECTIVE COATING Chips, blisters, wear		
VALVES Function, corrosion, sticking		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
BUILDING OPERATIONS
OPERATING PROCEDURE

Procedure No. 201
Issue Date 1-5-87
Revision Date: 8-3-87
Revision 2

Written By: *Aug. J. Lee*

Approved By: *W. H. [Signature]*

BUILDING HAZARDOUS WASTE TANK OPERATIONS

GENERAL

Within LMSC's Facility 1, hazardous waste tanks are located for the collection of specific types of waste. Ten tanks are for the collection of metal-bearing acid and base solutions from metal finishing and plating processes; four of the tanks are for the collection of contaminated coolants and oils. There is single tank at Building 562 in Facility 5 for the collection of metal-bearing acid and base solutions.

The hazardous waste collection tanks for the metal-bearing solutions and wastewater are located as follows:

Building 103	Tanks WT 103-1, WT103-2, and WT103-4
Building 150	Tanks WT 150-2 and 150-3
Building 151	Tank WT 151-2
Building 159	Tank WT 159-8 and WT159-9
Building 170	Tank WT 170-3
Building 182	Tank WT 182-2
Building 562	Tank WT 562-1 (Facility 5)

The tank at Building 562, WT 562-1, is a separate, isolated collection tank serving a research laboratory in Facility 5. This tank collects metal-bearing solution from laboratory/pilot plant operations and is not a part of the Facility 1 system. It is monitored separately and is not connected to the Facility 1 tank and pipeline system.

With the exception of WT 562-1, the above tanks are a part of a designed system which serves only processes involving metal finishing or plating. The only waste stream from these processes are wastewaters and solutions which are acidic or basic, and contain soluble metals. The primary metals in the solutions are Chromium and Copper.

For each of the processes, there are normally two wastewater streams.

1. Rinsewater

Rinsewater is generated from washing tanks which are used to rinse chemically treated parts. The rinse or washing tanks serve the function of removing residual solution from the parts.

Rinsewater tanks are replenished with water or deionized water. The wastewater stream from these tanks is normally very low in contaminants and is of sewerable quality. The rinsewater is piped separately from process solutions to a separate collection tank from which it is pumped to the LMSC Holding Ponds at B/175. There, it is combined with the rinsewater from other buildings; it is then pumped to the City of Sunnyvale sanitary sewer. This provides a single point of discharge to the sewer. The sewer discharge is sampled with a composite sampler daily; The City of Sunnyvale samples the discharge monthly. A continuous measurement of pH and conductivity is made and recorded on a chart at B/175.

Rinsewater is pumped automatically to the Holding Ponds through the Rinsewater line of the Industrial Wastewater Line system which is connected to all of the process Buildings.

At each of the process buildings, and prior to entering the rinsewater collection tank for pumping to the Holding Ponds, the rinsewater streams pass through a diversion system. This system measures the pH and conductivity of the rinsewater. If either the pH or the conductivity exceeds set limits, the rinsewater is diverted by a valve actuated by the pH and conductivity to the hazardous waste tank for the building.

The pH set points (low and high) are pH 4 and pH 10 for all buildings except B/151; at that building the lower set point is at pH 3. The reason for the different set point at B/151 is that the processes generate some acid rinsewaters otherwise uncontaminated with metals, and the B/151 input of rinsewater from the other buildings (normally slightly alkaline), results in a total combined wastewater stream at the Holding Ponds of pH 8 - 10.

The conductivity setpoint is 1000 megohms for all of the buildings except B/151; at B/151 the setpoint is 1500 megohms. This parameter is used to detect high ionic content. The conductivity setpoint assures that strong metal-bearing wastewater will be diverted into the hazardous waste tank, regardless of pH.

2. Non-sewerable Waste Solutions

In addition to the diverted rinsewater described above, the locations in the process which generate non-sewerable hazardous wastes are piped directly to the hazardous waste tanks. The piping is segregated and separate from the rinsewater piping. The types of solutions which can be transferred to the hazardous waste tanks includes process tank dumps (when replenishing the process tank solution or making up a new solution), tank washdown solution, and washings from spills or overflows. These solutions are

treated as hazardous waste in all circumstances.

The other hazardous waste tanks in Facility 1 are for the collection of spent or contaminated coolants and oils. They are not connected to the system which serves the acidic and basic metal-bearing wastewater; they are not connected to any common pipeline system. The tanks are as follows:

Building 103	Tank 103-CO1 (For the collection of cutting oils)
Building 159	Tank 159-4 (For the collection of cutting oils)
Building 170	Tank 170-WO (For the collection of contaminated oil)
Building 140	Tank WT 140 (For the collection of cutting oils drained from aluminum scrap)

These tanks are monitored separately from the wastewater tanks due to the nature of the hazardous waste collected.

The hazardous wastes accumulated in the all of the tanks described above are subject to all of the regulations affecting generators of hazardous waste.

These include, but are not limited to the following:

1. At no time will the contents of the tank exceed 5000 gallons.
2. No waste accumulation may be held for more than 90 days; the tanks must emptied to the best extent practically possible at a minimum frequency of 90 days.
3. Each tank must be analyzed to establish waste characteristics prior to disposal.
4. Additions to the tanks must be recorded with the tank levels and volumes monitored daily.
5. All applicable procedures and regulations must be observed when disposal shipment are made.
6. The tanks must be inspected for deficiencies on a periodic basis as prescribed by regulation.

PROCEDURES

The following procedures define the operation of hazardous waste tanks in LMSC's Facility 1.

RECORDS

Hazardous Waste Operation will maintain a sectioned binder for the operating records for the hazardous waste tanks. The binder will include a section for each of the tanks. This procedure will be in the front of the binder for reference. The section for each tank will include the following:

1. Tank calibration chart and description of the means of measuring the volume (gallons) in the tank.
2. HAZARDOUS WASTE TANK INVENTORY LOG (Form 201 A) for the specific tank.
3. HAZARDOUS WASTE TANK TRANSFER LOG(S) (Form 201 B) for the

specific tank.

4. DAILY HAZARDOUS WASTE TANK INSPECTION FORM (Form 202 A) for the specific tank.
5. WEEKLY HAZARDOUS WASTE TANK INSPECTION FORM (Form 202 B) for the specific tank.

The binder will be available for inspection at all times. Data from the binder will be collected or copied monthly and filed by Hazardous Waste Operations at B/131.

MONITORING

Each operating day, Monday through Friday, each tank shall be monitored and the following information recorded:

1. HAZARDOUS WASTE TANK INVENTORY LOG (Form 201 A)
 1. At the start of each month (the form covers one months operation) fill in the month, year, and tank number. Also fill in the day of the week by letter designation next to the date (M, TU, W, TH, F, SA, SU). From the previous months log, fill in the DATE OF LAST EMPTYING at the bottom of the form. This is the date, in the previous month, on which the tank was last emptied, and provides a record and tracking method to insure that the tank is emptied within every 90 day period.
 2. Each day, utilizing the method on the tank calibration chart for the specific tank, measure the level in the tank in inches. From the calibration chart, find the volume in gallons. Record both the level reading and the volume in the spaces provided on the form.
 3. Each day, fill in the COMMENTS-ACTIVITY space on the form as follows:
 1. If no changes occur in the tank level, write "No Change".
 2. If the tank level has increased, write in the source of the addition, e.g., "Upset and Diversion from Process X" "Tank ZZZ dumped", etc.
 3. If the tank level has decreased, write the reason in the appropriate section, i.e., "Transfer to Treatment Plant", "IT Truck Disposal" (include Manifest No.), etc. All entries are to be complete, and filled in at the time of transfer.
 4. Each day the inspector must sign, not initial the daily entry in the space provided.

TANK TRANSFERS

Tank transfers are made to dispose of the hazardous waste accumulated in the tank. Each hazardous waste tank must be emptied at a frequency of no more than 90 days. Within LMSC

Facility 1, the HAZARDOUS WASTE TANK TRANSFER LOG (Form 201 B) will be used to document tank transfers.

1. Prior to transfer, the hazardous waste in the tank must be sampled and the waste characterized. Sampling procedures and typical analysis performed are attached.
2. Once the hazardous waste in the tank has been characterized and determined to meet requirements for transfer, transfer to empty the tank will be done following the procedures below; TRANSFER TO CARRIER TRUCK or TRANSFER TO TREATMENT PLANT. The document used to record each transfer is the HAZARDOUS WASTE TANK TRANSFER LOG (Form 201 B)

TRANSFER TO CARRIER TRUCK

This means of transfer is to off-site disposal by a registered waste hauler. Disposal shipments require the use of the UNIVERSAL HAZARDOUS WASTE MANIFEST and all other labeling and identification requirements for disposal. See Procedure 405, HAZARDOUS WASTE DISPOSAL.

1. The date and tank number is filled in on the HAZARDOUS WASTE TANK TRANSFER LOG.
2. Fill in the TANK CONTENT for the classification of waste in the tank. This is normally known from generator information on input to the tank, and is recorded on the HAZARDOUS WASTE TANK MONITORING LOG.
3. In every case, a sample of the tank contents must be taken and analyzed. The sample number must be entered on the HAZARDOUS WASTE TRANSFER LOG, and pertinent information on the analysis. The laboratory report is the definitive document for the specific transfer.
4. The beginning tank level in inches and the beginning tank volume in gallons must be measured and entered on the form. Reference is the calibration chart and method of measurement specific for each hazardous waste tank.
5. Hookup, transfer, and disconnection of the hoses used for transfer from the hazardous waste tank to the carrier truck is the responsibility of LMSC Maintenance and the driver of the waste hauling tank truck.
6. The hazardous waste tank will be emptied to the greatest extent practically possible, and shall be considered "empty" when this is accomplished.
7. The ending inches and volumes will be entered on the HAZARDOUS WASTE TANK TRANSFER LOG, and the total volume of the transfer will be derived and entered by subtracting the ending volume from the beginning volume.

8. The UNIVERSAL HAZARDOUS WASTE MANIFEST document number for the shipment and the name of the carrier. If more than one carrier and manifest are involved, the same information should be entered in the spaces provided.

TRANSFER TO TREATMENT PLANT

This mode of transfer is to the LMSC Central Wastewater Treatment Plant at B/114 via the dedicated Industrial Waste Line. At the treatment plant, the hazardous waste solution will be treated (1) adjust the pH to 7 -9, (2) reduce any hexavalent Chromium to trivalent Chromium, and (3) precipitate all heavy metals to a sludge, which is then filtered from the water in the solution; the water can then be discharged as sewerable wastewater. The Central Wastewater Treatment Plant is a facility permitted by the Department of Health Services for this service.

1. Two Hazardous Waste Operations employees are required during transfer operations; one at the hazardous waste tank to be transferred, and one at the Wastewater Treatment Plant. Initial check should be made of the belt pagers each individual carries; this is done by telephoning the page call to the individual and confirming receipt of the page. When this is accomplished, write "OK" in the space provided on the HAZARDOUS WASTE TANK TRANSFER LOG; if page is not received, correct malfunction (normally by installing a new battery) before proceeding. Communications will be by telephone when transfer is started and when completion of transfer is confirmed. The telephone/page system will also be used for any required communications during transfer operations.
2. The beginning tank level in inches and the beginning tank volume in gallons should be measured and entered on the form. Reference is the calibration chart and method of measurement specific for each hazardous waste tank.
3. Sufficient storage tank volume to receive the transfer volume and flush water is verified by the operators.
4. Solution compatibility with the contents of the receiving tank at the Wastewater Treatment Plant is verified.
5. Manual valves on the process solution transfer line are unlocked and opened.
6. Transfer pump is unlocked and activated.
7. When transfer is complete, 300 gallons of rinse water is pumped, followed by sufficient plant air to flush the line. Completion of the transfer is indicated by the cessation of liquid flow into the receiving tank at the Wastewater Treatment Plant.

8. When the transfer is complete, the transfer pump is locked out and the transfer line valves are shut and locked, securing the system.
9. Verification of the volume of transfer is made at the Wastewater Treatment Plant. The entries for level and volume changes at both the hazardous waste tank and the treatment plant are made in the spaces on the HAZARDOUS WASTE TANK TRANSFER LOG. The log will be maintained in the specific section of the operating record for the hazardous waste tank.

The keys for the valves and pumps are available only to Hazardous Waste Operations (Q/47-30) personnel. All transfers shall be made under the direct control and supervision of Hazardous Waste Operations personnel. All Hazardous Waste Operations personnel involved in the transfers shall carry pagers for emergency communication.

The transfer procedure above corresponds to the procedure in the Operating Plan for the Central Wastewater Treatment Plant, which is a Department of Health Services permitted facility.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
BUILDING SYSTEMS
OPERATING FORM

Form No. 201 B
Issue Date: 4-7-87
Revision Date: 8-7-87
Revision No. 1

Written By: Jim Tule
Approved By: [Signature]

HAZARDOUS WASTE TANK TRANSFER LOG

Date _____ Tank No. _____ Operator _____

Operator _____

Tank Content _____

Analysis/Evaluation _____

TRANSFER TO CARRIER TRUCK

Waste Tank Level (Inches) Starting _____ Ending _____

Waste Tank Volume (Gallons) Starting _____ Ending _____

Volume Change (Gallons) _____

Manifest No. _____ Carrier _____

Manifest No. _____ Carrier _____

TRANSFER TO TREATMENT PLANT

Check Pager Operation _____

From Waste Tank No. _____

Waste Tank Level (Inches) Starting _____ Ending _____

Waste Tank Volume (Gallons) Starting _____ Ending _____

Volume Change (Gallons) _____

To Treatment Plant Storage Tank No. _____

Volume (Gallons) Starting _____ Ending _____

Volume Change (Gallons) _____

Line Flushed _____ Volume (Gallons) _____ Air Purge _____

Transfer Line Valve Closed, Chain Installed, and Padlock
Locked to Prevent Unauthorized Operation _____

COMMENTS/OBSERVATIONS

TANK CALIBRATION CHARTS

WT 103-1 Volume Chart

- This vertical cylindrical tank has a capacity of approximately 7000 gallons.
- The tank is equipped with a cut off valve to limit the volume of waste to under 5000 gallons.
- The cut off valve is inspected daily by pulling on the chain connected to the high level float ball to observe that the actuator for the cut off valve works.
- The number of gallons in the tank is determined directly by matching the gallon indicator mark on the side of the tank with the mark on the counterweight. A wire connects a float inside the tank to the counterweight on the outside of the tank.

Waste Tank 103-2 Volume Chart

- This vertical cylindrical tank has a capacity of approximately 5000 gallons.
- The tank is equipped with a cut off valve to limit the volume of waste to under 5000 gallons.
- The cut off valve is inspected daily by pulling on the chain connected to the high level float ball to observe that the actuator for the cut off valve works.
- The number of gallons in the tank is determined directly by matching the gallon indicator mark on the side of the tank with the mark on the counterweight. A wire connects a float inside the tank to the counterweight on the outside of the tank.

Waste Tank 103-4 Volume Chart

Inches	Centimeters	Gallons
10	25	77
12	30	92
14	36	108
16	41	123
18	46	138
20	51	154
22	56	169
24	61	185
26	66	200
28	71	215
30	76	231
32	81	246
34	86	261
36	91	277
38	97	292
40	102	308
42	107	323
44	112	338
46	117	354
48	122	369
50	127	384
52	132	400
54	137	415
56	142	431
58	147	446
60	152	461
62	157	477
64	163	492

- This tank has a capacity of over 500 gallons.
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 103-CO1 Volume Chart

Inches	Centimeters	Gallons
10	25	322
12	30	387
14	36	451
16	41	516
18	46	580
20	51	645
22	56	709
24	61	774
26	66	838
28	71	903
30	76	967
32	81	1,032
34	86	1,096
36	91	1,161
38	97	1,225
40	102	1,290
42	107	1,354
44	112	1,419
46	117	1,483
48	122	1,548
50	127	1,612
52	132	1,676
54	137	1,741
56	142	1,805
58	147	1,870
60	152	1,934
62	157	1,999
64	163	2,063
66	168	2,128
68	173	2,192
70	178	2,257
72	183	2,321
74	188	2,386
76	193	2,450
78	198	2,515
80	203	2,579
82	208	2,644
84	213	2,708
86	218	2,773
88	224	2,837
90	229	2,902
92	234	2,966
94	239	3,031
96	244	3,095
98	249	3,160
100	254	3,224
102	259	3,288
104	264	3,353
106	269	3,417
108	274	3,482
110	279	3,546
112	284	3,611
114	290	3,675
116	295	3,740

- This tank has a capacity of 3740 gallons.
- The volume of waste in the tank is determined by noting the level of the counter-balance, in inches, on the outside of the tank and converting this measurement to gallons by using the above chart.

Waste Tank 140-WO Volume Chart

Inches	Centimeters	Gallons
4	10	70
6	15	106
8	20	141
10	25	176
12	30	211
14	36	247
16	41	282
18	46	317
20	51	352
22	56	388
24	61	423
26	66	458
28	71	493
30	76	529
32	81	564
34	86	599
36	91	634
38	97	670
40	102	705
42	107	740
44	112	775
46	117	811
48	122	846
50	127	881
52	132	916
54	137	952
56	142	987
58	147	1,022
60	152	1,057
62	157	1,093
64	163	1,128
66	168	1,163
68	173	1,198
70	178	1,234
72	183	1,269

- This tank has a capacity of 1269 gallons.
- The volume of waste in the tank is determined by matching the level of waste in the tank with the level markings, in inches, on the side of the tank (the tank is made of translucent plastic), and converting the measurement to gallons using the above chart.

Waste Tank 150-2 Volume Chart

Inches	Centimeters	Gallons
10	25	238
12	30	286
14	36	333
16	41	381
18	46	428
20	51	476
22	56	524
24	61	571
26	66	619
28	71	666
30	76	714
32	81	762
34	86	809
36	91	857
38	97	904
40	102	952
42	107	1,000
44	112	1,047
46	117	1,095
48	122	1,142
50	127	1,190
52	132	1,238
54	137	1,285
56	142	1,333
58	147	1,380
60	152	1,428
62	157	1,476
64	163	1,523
66	168	1,571
68	173	1,618
70	178	1,666
72	183	1,714
74	188	1,761
76	193	1,809
78	198	1,858
80	203	1,904
82	208	1,952
84	213	1,999

• This tank has a capacity of 2000 gallons.

• The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 150-3 Volume Chart

Inches	Centimeters	Gallons
10	25	238
12	30	286
14	36	333
16	41	381
18	46	428
20	51	476
22	56	524
24	61	571
26	66	619
28	71	666
30	76	714
32	81	762
34	86	809
36	91	857
38	97	904
40	102	952
42	107	1,000
44	112	1,047
46	117	1,095
48	122	1,142
50	127	1,190
52	132	1,238
54	137	1,285
56	142	1,333
58	147	1,380
60	152	1,428
62	157	1,476
64	163	1,523
66	168	1,571
68	173	1,618
70	178	1,666
72	183	1,714
74	188	1,761
76	193	1,809
78	198	1,856
80	203	1,904
82	208	1,952
84	213	1,999

- This tank has a capacity of 2000 gallons.
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 151-2 Volume Chart

Inches	Centimeters	Gallons
10	25	313
12	30	376
14	36	438
16	41	501
18	46	563
20	51	626
22	56	689
24	61	751
26	66	814
28	71	876
30	76	939
32	81	1,002
34	86	1,064
36	91	1,127
38	97	1,189
40	102	1,252
42	107	1,315
44	112	1,377
46	117	1,440
48	122	1,502
50	127	1,565
52	132	1,628
54	137	1,690
56	142	1,753
58	147	1,815
60	152	1,878
62	157	1,941
64	163	2,003
66	168	2,066
68	173	2,128
70	178	2,191
72	183	2,254
74	188	2,316
76	193	2,379
78	198	2,441
80	203	2,504
82	208	2,567
84	213	2,629
86	218	2,692
88	224	2,754
90	229	2,817
92	234	2,880
94	239	2,942

(Chart is continued on the next page.)

- This tank has a capacity of 4257 gallons.
- The volume of waste in the tank is determined by noting the read-out on the light emitting diode (LED) level indicator in meters and then converting the measurement to gallons by using the above chart (multiply meters by 100 to get centimeters)

Inches	Centimeters	Gallons
96	244	3,005
98	249	3,067
100	254	3,130
102	259	3,193
104	264	3,255
106	269	3,318
108	274	3,380
110	279	3,443
112	284	3,506
114	290	3,568
116	295	3,631
118	300	3,693
120	305	3,756
122	310	3,819
124	315	3,881
126	320	3,944
128	325	4,006
130	330	4,069
132	335	4,132
134	340	4,194
136	345	4,257

- This tank has a capacity of 4257 gallons.
- The volume of waste in the tank is determined by noting the read-out on the light emitting diode (LED) level indicator in meters and then converting the measurement to gallons by using the above chart (multiply meters by 100 to get centimeters).

Waste Tank 159-4 Volume Chart

Inches	Gallons
3	34
6	94
9	170
12	256
15	351
18	451
21	556
24	664
27	773
30	883
33	990
36	1,095
39	1,196
42	1,291
45	1,377
48	1,453
51	1,513
54	1,547

- This horizontal cylindrical tank has a capacity of approximately 1550 gallons.
- The volume of waste in the tank is determined by observing the level, in inches, of waste in the site glass for the tank, and converting this measurement to gallons by using the above chart.

WT 159-8 Volume Chart

Inches	Centimeters	Gallons
10	25	598
12	30	718
14	36	838
16	41	958
18	46	1,077
20	51	1,197
22	56	1,317
24	61	1,436
26	66	1,556
28	71	1,676
30	76	1,796
32	81	1,915
34	86	2,035
36	91	2,155
38	97	2,274
40	102	2,394
42	107	2,514
44	112	2,633
46	117	2,753
48	122	2,873
50	127	2,992
52	132	3,112
54	137	3,232
56	142	3,352
58	147	3,471
60	152	3,591
62	157	3,711
64	163	3,830
66	168	3,950
68	173	4,070
70	178	4,190
72	183	4,309
74	188	4,429
76	193	4,549
78	198	4,668
80	203	4,788

- This tank has a capacity of 4800 gallons.
- The volume of waste in the tank is measured by reading the level of waste in the tank, in inches, from the float level indicator and converting this measurement into gallons using the above chart.

Waste Tank 170-3 Volume Chart

Inches	Centimeters	Gallons
10	25	399
12	30	479
14	36	558
16	41	638
18	48	718
20	51	798
22	56	877
24	61	957
26	66	1,037
28	71	1,117
30	76	1,196
32	81	1,276
34	86	1,356
36	91	1,436
38	97	1,515
40	102	1,595
42	107	1,675
44	112	1,755
46	117	1,834
48	122	1,914
50	127	1,994
52	132	2,074
54	137	2,154
56	142	2,233
58	147	2,313
60	152	2,393
62	157	2,473
64	163	2,552
66	168	2,632
68	173	2,712
70	178	2,792
72	183	2,871
74	188	2,951
76	193	3,031
78	198	3,111
80	203	3,190
82	208	3,270
84	213	3,350
86	218	3,430
88	224	3,509
90	229	3,589
92	234	3,669
94	239	3,749
96	244	3,828
98	249	3,908
100	254	3,988

- This tank has a capacity of 3988 gallons.
- The volume of waste in the tank is measured by reading the level of waste in the tank, in inches, from the float level indicator and converting this measurement into gallons using the above chart.

Waste Tank 170-WO Volume Chart

Inches	Centimeters	Gallons
2	5	33
4	10	67
6	15	100
8	20	133
10	25	167
12	30	200
14	36	233
16	41	267
18	46	300
20	51	333
22	56	367
24	61	400
26	66	433
28	71	467
30	76	500
32	81	533
34	86	567
36	91	600
38	97	633
40	102	667
42	107	700
44	112	733
46	117	767
48	122	800
50	127	834
52	132	867
54	137	900

- The capacity of this tank is 900 gallons
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 182-2 Volume Chart

Inches	Centimeters	Gallons
10	25	725
11	28	868
12	30	1,011
13	33	1,154
14	36	1,296
15	38	1,439
16	41	1,582
17	43	1,725
18	46	1,868
19	48	2,011
20	51	2,153
21	53	2,296
22	56	2,439
23	58	2,582
24	61	2,725
25	64	2,868
26	66	3,011
27	69	3,153
28	71	3,296
29	74	3,439
30	76	3,582
31	79	3,725
32	81	3,868
33	84	4,011
34	86	4,153
35	89	4,296
36	91	4,439
37	94	4,582
38	97	4,725
39	99	4,868
40	102	5,000

- This tank has a capacity of over 5000 gallons.
- The tank is equipped with a cut-off valve to limit the volume of waste to under 5000 gallons.
- The cut-off valve is inspected daily.
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 562-1 Volume Chart

Inches	Gallons
3	38
6	105
9	191
12	291
15	401
18	520
21	646
24	778
27	915
30	1,056
33	1,199
36	1,344
39	1,489
42	1,635
45	1,780
48	1,923
51	2,064
54	2,200
57	2,333
60	2,459
63	2,578
66	2,688
69	2,788
72	2,874
75	2,941
78	2,979

- This horizontal cylindrical tank has a capacity of approximately 3000 gallons.
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

Waste Tank 562-1 Volume Chart

Inches	Gallons
3	38
6	105
9	191
12	291
15	401
18	520
21	646
24	778
27	915
30	1,056
33	1,199
36	1,344
39	1,489
42	1,635
45	1,780
48	1,923
51	2,064
54	2,200
57	2,333
60	2,459
63	2,576
66	2,688
69	2,788
72	2,674
75	2,941
78	2,979

- This horizontal cylindrical tank has a capacity of approximately 3000 gallons.
- The volume of waste in the tank is determined by inserting the measuring stick into the tank, noting the level, in inches, of waste in the tank, and converting the measurement to gallons by using the above chart.

LABORATORY PROCEDURES

General Sampling ProceduresPurpose

All samples should be as accurate and representative of the entity sampled as possible while providing practical and safety measures for the personnel performing the sampling. In order to avoid contact with potentially hazardous materials, an apparatus of some type is used to collect the sample before transfer into the storage container. Some general procedures for the most commonly used equipment are listed below.

Application

At non-routine sampling locations, the method used is at the discretion of the sampling personnel. In general a bucket type grab sample is used for wastetanks and ponds. A thief, colliwasa, or open ended tube is used for grab samples of drums or stratified waste tanks. A peristaltic pump, bladder pump or bailer is used for a grab sample of a groundwater well. Automatic autosamplers are used for continuous sampling of wastestreams.

References

Handbook for Sampling and Sample Preservation of Water and Wastewater
(EPA-600/4-82-029)

Samplers and Sampling Procedures for Hazardous Waste Streams (EPA-600/2-80-018)

Characterization of Hazardous Waste Sites- A Methods Manual, Volume II.
Available Sampling Methods (EPA-600/4-83-040)

ISCO Open Channel Flow Measurement Handbook, Second Edition, 1981

Procedures

PROCEDURE: SAMP-03.1

To sample liquid in a pond where no other means is possible, a stirred or homogenous wastetank, or facility with horizontal stratification, use a bucket attached to a rope:

1. Lower the bucket into the solution and withdraw a small amount from the surface. Swirl the solution around to rinse the bucket and then discard the solution back into the facility being sampled.
2. Take up a grab sample in a bucket. If a composite grab sample is desired to ensure representativeness and compensate for non-homogeneity, pour the single grab sample into a large beaker and note the volume of the sample. Continue sampling various locations rinsing the bucket with new solution each time. Pour the same volume as the original of new sample into the compositing beaker until the desired number of composites have been obtained. Swirl the compositing beaker to mix.

3. Pour some sample solution into the storage container to rinse it and discard this solution. Then pour the actual sample into the storage container.

PROCEDURE: SAMP-03.2

To sample liquid in a waste tank or drum where vertical stratification is suspected, use a collwasa or glass open ended tube to take an "undisturbed core" type sample:

1. Rinse the apparatus inside and outside with solution from the surface of the facility being sampled. If this is not possible, sample directly.
2. Place the sampler in an open position.
3. Slowly lower the sampling apparatus in the solution allowing the solution to rise inside and outside at approximately the same rate (otherwise the sample will be disturbed as mixing will occur when solution rushes inside the sampler).
4. When the sampler reaches the desired depth, allow the solution to reach its natural level in the sampler.
5. Close the sampler collwasa sampler or place a gloved finger or stopper over the end of the glass tube.
6. Slowly withdraw the sampler and either wipe off the outside or let the drippings fall back into the main solution. If a transparent sampler is used, make stratification observations at this point.
7. Discharge the sampler into a large beaker. If a composite of several depths or areas is desired take several samples of identical volume and mix together in the beaker. Swirl the beaker to mix the sample.
8. Rinse each sample storage container with solution first, discard solution, then fill the containers with actual sample.

NOTE: If a reaction is observed when a glass tube is inserted (violent agitation, smoke, light etc.), leave the area immediately. If the glass tube becomes cloudy or smokey, the presence of hydrofluoric acid is indicated and a sampler of rigid plastic tubing should be used.

PROCEDURE: SAMP-03.3

To sample a stratified tank where a depth profile is desired, use a weighted bottom sampler or thief to take "disturbed" depth interval samples:

1. In general, samples should be taken in order from the closest to the surface to the furthest down because the solution above the sampler will be disturbed by rising air displaced as the sampler fills. The solution in the immediate vicinity of the sampler will also be disturbed by the action of the solution rushing into the sampler.
2. Rinse the sampler inside and outside with solution from the surface of the tank. If this is not possible, sample directly.
3. With the sampler in the closed position, slowly lower it into the solution to desired depth.

4. Open the sampler by jerking on the weighted bottom sampler line or unscrewing the thief cap. When air stops rising the sampler is full.
5. Slowly withdraw the sampler from the solution and discharge the grab sample into a beaker and mix, or discharge directly into a sample storage container. This sample will represent a discrete point or depth within the facility.
6. Take multiple samples of identical volume and mix together in a beaker if a composite sample is desired to characterize the facility.

PROCEDURE: SAMP-03.4

To purge and sample a shallow groundwater well using a peristaltic pump:

1. To ensure the samples taken are representative of the aquifer, stagnant water in the well must be removed before sampling. Generally three to ten casing volumes of water are removed when the well is perforated in a water-bearing zone. Peristaltic pumping action is applicable to wells where the pump hose inlet will be located 20 feet or less below the surface. Peristaltic pumping is used to purge stagnant water and sample inorganic parameters. It is not appropriate for organics parameters as the pumping action may strip out the volatile compounds.
2. Measure the depth to groundwater from a known reference point, either the top of casing or top of Christie box with a tape measure.
3. Calculate the quantity of water in a casing volume by the following formula (converting to common units):

$$(3.14)(\text{Depth of Well} - \text{Depth to Water Table})(\text{Radius of Well})^2 = \text{Volume}$$
4. For a well with known construction details, place a clean pump hose down the well until the hose is approximately 1-2 feet below the top of the screened interval. Do this slowly so minimal amounts of well sediment will be disturbed.
5. If the construction details are unknown, place a clean pump hose down the well until the hose touches the bottom. Do this slowly so minimal amounts of well sediment will be disturbed. Then draw ~1-2 feet of hose back out of the well.
6. Turn on the pump and remove the required number of volumes of water. The nominal pump rate of the ISCO peristaltic pump is 3000ml/min. If the pump rate for a pump is not known, calculate by determining the time required to fill a container of known volume. Be careful not to disturb the hose once pumping has begun so as not to disturb the well equilibration.
7. After the stagnant water is removed, if stabilization measurements for pH, conductance, temperature and turbidity are required, perform them at this time while continuing to pump more water from this well.

ROUTINE ANALYSES REQUIRED ON WASTE TANKS -- Examples

Bldg. 103 Waste Tank 1: pH (SW846-9040);
Specific conductance (SW846-9050);
Hexavalent chromium (SW846-7196);
Acid-extractable metals (SW846-6010) with prep. APHA
STD METHODS 302B (1980); or Total metals (SW846-6010)
with prep. 3010: Ag, Be, Cd, Co, Cr, Cu, Ni, Pb, Zn.

Bldg. 102 Waste Tank 2: pH (SW846-9040);
Specific conductance (SW846-9050);
Hexavalent chromium (SW846-7196);
Acid-extractable metals (SW846-6010) with prep. APHA
STD METHODS 302B (1980), or Total metals (SW846-6010)
with prep. 3010: Ag, Be, Cd, Co, Cr, Cu, Ni, Pb, Zn.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
BUILDING SYSTEMS
OPERATING PROCEDURE

Procedure No. 202
Issue Date: 4-7-87
Revision Date:
Written By: King, Fred
Approved By: W. Willard

BUILDING HAZARDOUS WASTE TANK INSPECTIONS

GENERAL

Each tank in hazardous waste service must be inspected at specified frequencies for malfunction of equipment and deterioration of the tank itself. These inspections will be conducted by Hazardous Waste Operations utilizing the following forms and procedures.

PROCEDURES

DAILY HAZARDOUS TANK INSPECTION LOG (Form 202 A)

Each day, the specific hazardous waste tank must be inspected to insure that the tank contains less than 5000 gallons. For tanks of more than 5000 gallons capacity, a positive cutoff valve must be installed to limit additions to the tank to less than 5000 gallons; this cutoff mechanism must be inspected daily. overflow is functional.

1. For tanks of less than 5000 gallons capacity as determined from the calibration chart for the specific tank, no daily inspection is required.
2. For tanks of more than 5000 gallons capacity, the cutoff mechanism must be tested for proper operation daily.

WEEKLY HAZARDOUS WASTE TANK INSPECTION FORM (Form 202 B)

Each week, each hazardous waste tank must be inspected for the items shown on the WEEKLY HAZARDOUS WASTE TANK INSPECTION FORM.

1. The visible portions of the tank must be inspected to detect corrosion or erosion and leaking of fixtures and seams.
2. The area surrounding the tank must be inspected to detect obvious signs of leakage.
3. If no signs of the above are found in the inspection, the inspector shall enter "OK" in the appropriate spaces on the form.
4. If evidence of any of the above deficiencies are found, a detailed description of the findings must be entered, and Hazardous Waste Operation supervision notified immediately so that corrective action can be initiated. Based on the action required, appropriate action descriptions, repair

or expenditure request document numbers, and expected completion date information will be also entered on the form.

The above instructions are included on the forms for inspection and are attached to this procedure.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
BUILDING SYSTEMS
OPERATING FORM

Form No. 202 A

Issue Date: 4-1-87

Revision Date:

Written By: *[Signature]*

Approved By: *[Signature]*

DAILY HAZARDOUS WASTE TANK INSPECTION LOG

TANK NO. _____

MONTH AND YEAR _____

FOR TANKS OF LESS THAN 5000 GALLONS CAPACITY THIS INSPECTION IS NOT REQUIRED. TOTAL CAPACITY OF THE SPECIFIC TANK IS SHOWN ON THE TANK CALIBRATION CHART.

FOR TANKS OF GREATER THAN 5000 GALLONS CAPACITY, THE FOLLOWING PROCEDURE MUST BE USED:

TEST CUTOFF MECHANISM BY RAISING THE FLOAT IN THE TANK TO THE SETPOINT LEVEL OF LESS THAN 5000 GALLONS. OBSERVE ACTION OF CUT-OFF VALVE. IF VALVE ACTUATES, WRITE "OK" IN SPACE PROVIDED BELOW. IF VALVE FAILS TO ACTUATE, CONTACT MAINTENANCE IMMEDIATELY FOR REPAIR. THE MR# FOR THE REPAIR SHOULD BE ENTERED IN THE SPACE PROVIDED AND "COMPLETE" WRITTEN WHEN THE REPAIR IS FINISHED AND PROPER OPERATION OBSERVED. IF REPAIRS ARE NOT COMPLETED, THE TANK MUST BE SHUT DOWN BY CLOSING MANUAL INLET VALVES UNTIL THE CUTOFF VALVE IS OPERATING PROPERLY. "WEEKEND" OR "HOLIDAY" SHOULD BE ENTERED IN THE SPACE ON NON-OPERATING DAYS.

DATE	DAY	INSPECTION	OPERATOR	DATE	DAY	OBSERVATIONS	OPERATOR
01				17			
02				18			
03				19			
04				20			
05				21			
06				22			
07				23			
08				24			
09				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			
16							

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
BUILDING SYSTEMS
OPERATING FORM

Form No. 202 B
Issue Date: 4-1-87
Revision Date:
Written By: *John Taylor*
Approved By: *W. Willard*

WEEKLY HAZARDOUS WASTE TANK INSPECTION FORM

TANK NO. _____

MONTH & YEAR _____

EACH WEEK THE VISIBLE PORTIONS OF EACH HAZARDOUS WASTE TANK MUST BE INSPECTED FOR ANY SIGN OF CORROSION, EROSION, OR LEAKAGE. THE INSPECTION INCLUDES BOTH THE TANK AND CONNECTING PIPING AND EQUIPMENT. THE AREA SURROUNDING THE TANK MUST BE INSPECTED FOR OBVIOUS SIGNS OF LEAKAGE.

IF THERE ARE NO DEFICIENCIES, WRITE "OK" IN THE SPACE PROVIDED. IF DEFICIENCIES ARE FOUND, A DESCRIPTION OF THE FINDING SHOULD BE WRITTEN IN THE SPACE, AND HAZARDOUS WASTE OPERATIONS SUPERVISION NOTIFIED IMMEDIATELY SO THAT CORRECTIVE ACTION CAN BE INITIATED. BASED ON THE ACTION REQUIRED, APPROPRIATE ACTION DESCRIPTIONS, MAINTENANCE REPAIR OR EXPENDITURE REQUEST DOCUMENTATION, AND CLOSURE (COMPLETION OF CORRECTION OF THE DEFICIENCY WILL BE STAPLED TO THE FORM AND MAINTAINED IN THE BUILDING TANK LOG BOOK

DATE	DAY	INSPECTION	OPERATOR
DATE	DAY	INSPECTION	OPERATOR
DATE	DAY	INSPECTION	OPERATOR
DATE	DAY	INSPECTION	OPERATOR
DATE	DAY	INSPECTION	OPERATOR

INSPECTION OF HAZARDOUS WASTE TANK INTERIORS

GENERAL

Each of the tanks in hazardous waste service must be inspected as required to insure no significant deterioration or any kind is occurring. To accomplish this, in addition to the weekly external inspection, the interior of each tank must be inspected on a schedule determined by the materials of construction of the tank, type of corrosion or erosion observed during previous inspections, and the characteristics of the waste being stored. For the hazardous waste tanks in LMSC's Facility 1, each tank shall be inspected annually.

The tanks to be inspected include the following

Building 103 Tanks WT 103-1, WT 103-2, WT 103-4, and WT 103-C01
Building 140 WT 140-1
Building 150 Tanks Wt 150-2 and WT 150-3
Building 151 Tank WT 151-2
Building 159 Tanks WT 159-4, WT 159-8 and WT 159-9
Building 170 Tanks WT 170-3 and WT 170-W0
Building 182 Tank WT 182-2
Building 562 Tank WT 562-1 (Facility 5)

PROCEDURE

1. The tank will be emptied, and vacuumed to insure complete removal of the waste stored. The tank will be washed with tap water until the washings show absence of contamination.

Wash water will be analyzed for pH and the full range of standard metals. This test is in accordance with the normal contents of the tanks. Washing will be continued until the analysis shows absence of contamination levels posing danger to personnel, i.e. normally below sewer limitations.

For tanks containing hydrocarbons, washing will be done to eliminate danger of vapor accumulation. Normal tank entry procedures will be followed in all cases.

Depending on the concentrations of the wash water during cleaning, the wash water will be sent to (1) the Holding Ponds if below sewer limitations, (2) to the Wastewater Treatment Plant, or (3) to bulk disposal via disposal contractor bulk truck to an off-site location. Records will be maintained of disposition of the wash water as per procedure for tank

transfers, Procedure 201, Form 201 B.

2. To inspect the larger tanks, entry may be required. Any tank entry is treated as a confined space entry, must be supervised by Lockheed Occupational Safety and Health, O/47-20, and must comply with Lockheed's C-12 Safety and Industrial Hygiene Standard 5.4

Attached is an exhibit copy of Safety and Industrial Hygiene Standard No. 5.4, which details the confined space entry requirements.

3. The tank interior is examined visually for any significant deterioration such as cracking, abrasion, pitting, etc. Any significant problem is to be remedied before the tank can be placed back in service.
4. Each inspection is documented in writing, including:
 1. Date of inspection
 2. Time of inspection
 3. Name of inspector
 4. Observations made
 5. Date of any repairs or remedies
 6. Nature of any repairs
5. Hazardous waste tank interior tank inspection documents will maintained and filed by Hazardous Waste Operations, O/47-30.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

1. SCOPE

This standard specifies the safeguards required before employees are to be allowed to enter and work within spaces, which have potential for being or becoming confined spaces.

2. DEFINITIONS

2.1 Confined Space

2.1.1 A space where both of the following conditions exist:

2.1.1.1 Existing ventilation is insufficient to remove dangerous air contamination and/or oxygen deficiency which may exist or develop.

2.1.1.2 Ready access or egress for the removal of a suddenly disabled employee is difficult due to the location and/or size of the opening(s).

2.1.2 Examples of spaces which are to be evaluated before entry to determine if they are to be considered as confined spaces and therefore treated in accordance with the appropriate sections of this and any other standards referenced herein are:

2.1.2.1 Utility Manhole Vaults.

2.1.2.2 Environmental Chambers.

2.1.2.3 Process Tanks large enough for a person to enter or get head and shoulders into. (Note: Process tanks may not seem to meet the difficult access and egress part of the definition for a confined space. However, they shall be treated as if the egress would be difficult).

2.1.2.4 Vapor degreasers meeting the same criteria as process tanks.

This list may not be all inclusive. If any enclosed or partially enclosed area appears that it could meet the definition of a confined space but is questionable, call Industrial Safety & Hygiene for assistance in determining whether it should be so classified.

2.2 Air Contamination. An atmosphere within an enclosed space which contains substances which would create dangerous air contamination if the concentration is high enough.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

2.3 Dangerous Air Contamination. An atmosphere presenting a threat of causing death, injury, acute illness, or disablement due to the presence of flammable and/or explosive, toxic, oxygen displacing or otherwise injurious or incapacitating substances.

2.4 Dangerous Air Contamination Due to "Flammable Gas" or Vapor. An atmosphere containing a gas or vapor at a concentration greater than 20% of its lower explosive or flammable limit (LEL or LFL).

2.5 Dangerous Air Contamination Due to Toxicity of a Substance. An atmospheric concentration of a toxic substance which is immediately hazardous to life or which would probably produce irreversible health damage.

2.6 Environmental Chamber. A container designed to be filled with other than ambient air or evacuated of air and which may be entered.

2.7 Existing Ventilation. The ventilation being used at the time of testing the atmosphere in the space.

2.8 Inert Gas. A gas which is chemically inactive and which has very little if any physiological effect on the human body. The principal hazard in its presence is in reducing the oxygen concentration in the air of a confined space.

2.9 Oxygen Deficient Atmosphere. An atmosphere with a concentration of oxygen less than 19.5% by volume (dry basis).

3. AUTHORIZATION TO ENTER A SPACE WITH POTENTIAL TO BE A CONFINED SPACE

3.1 Utility Manhole Vaults. Only employees qualified and authorized by the Industrial Safety and Hygiene Staff may enter Utility Manhole Vaults. (See Standard 5.6 for Utility Manhole Vault Entry Requirements).

3.2 All other spaces with confined space potential. Only employees qualified and authorized by the project manager shall enter a space with confined space potential.

4. HAZARDS

4.1 Oxygen Deficient Atmosphere

4.1.1 Atmospheres deficient in oxygen are hazardous. The deficiency is not readily recognizable without special oxygen measuring equipment. Most oxygen displacers, such as unodorized methane or nitrogen, are colorless and odorless.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

4.1.2 Symptoms of inhaling an atmosphere deficient in oxygen:

 PERCENT
 OXYGEN
 by VOLUME

SYMPTOMS

19.5-21%	Normal
17-19.5%	Legally deficient but normally no harmful effects
12-16%	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14%	Consciousness continues, emotional upsets, abnormal fatigue upon exertion, disturbed respiration.
6-10%	Nausea and vomiting, inability to move freely, loss of consciousness may occur; may collapse and although aware of circumstances be unable to move or cry out.
Below 6%	Convulsive movements, gasping respiration; respiration stops and a few minutes later heart action ceases.
0%	Breathing an atmosphere containing no oxygen will cause unconsciousness in a few seconds. Death will then follow in 3-5 minutes.

4.2 Toxic Vapor Atmospheres

4.2.1 It is possible that toxic substances can enter an enclosed space. Depending on the toxicity of the substance and the quantity involved the injurious effects can vary from skin irritations or slight headaches to unconsciousness or even death.

4.3 Flammable Vapor Atmosphere

4.3.1 The primary concern of flammable vapor or gas entering an enclosed space is fire. However, these same vapors may also be toxic. Both aspects must be evaluated.

5. PROCEDURES AND EMPLOYEE TRAINING

5.1 Before any space with confined space potential is entered, written pre-entry, operations within the space and emergency procedures shall be established by the organization responsible for the employees who will enter the space(s). These procedures shall be approved by Industrial Safety & Hygiene. The applicable intent of the guidelines contained in this and any referenced standards shall be incorporated into the procedure.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

5.2 Before any space with confined space potential is entered, the entering employee(s) shall be trained in accordance with the procedures required in Paragraph 5.1. If the procedure requires emergency standby personnel, they shall also be trained in accordance with the procedure.

5.3 The procedures shall include the requirement to advise each employee assigned or instructed to enter a space with confined space potential of the hazards which may be encountered.

6. PRE-ENTRY REQUIREMENTS

6.1 Lines, which may convey flammable, injurious, or incapacitating substances into the space, shall be disconnected, blinded or blocked off by other positive means to prevent the development of dangerous air contamination and/or oxygen deficiency within the space. The disconnection, blind or other positive means shall be so located or done in such a manner that inadvertent reconnection of the line, removal of the blind or negation of other positive means are effectively prevented.

6.2 The space shall be emptied, flushed, or otherwise purged of flammable, injurious or incapacitating substances to the extent feasible.

6.3 The air shall be tested with an appropriate, IS&H approved measuring device to determine whether dangerous air contamination and/or an oxygen deficiency exists.

6.4 A written record of the testing results shall be made and kept at the work site for the duration of the work.

6.5 Where interconnected spaces are blinded off as a unit, each space shall be tested and the results recorded, in accordance with Paragraphs 6.3 and 6.4. The most hazardous condition detected shall govern the procedures to be followed.

6.6 The entering employee(s) shall be trained in how to observe the surrounding area for drifting vapors or fumes from such sources as, tanks, piping, sewers and engine exhausts.

6.7 If dangerous air contamination and/or oxygen deficiency does not exist within the space, as demonstrated by tests conducted in accordance with Paragraph 6.3, and existing ventilation will remove dangerous air contamination and/or oxygen deficiency which may develop, entry into and work within the space may proceed.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

6.8 If dangerous air contamination and/or oxygen deficiency does not exist within the space, as demonstrated by tests performed in accordance with Paragraph 6.3, but existing ventilation may not remove dangerous air contamination and/or oxygen deficiency which may develop, entry into and work within the space may proceed subject to the following provisions:

6.8.1 Testing in accordance with Paragraph 6.3 shall be conducted with sufficient frequency to ensure that the development of dangerous air contamination and/or oxygen deficiency does not occur while anyone is within the space.

6.8.2 If the development of dangerous air contamination and/or an oxygen deficiency is imminent, such as containers which were known to have held highly toxic substances, use of toxic substances during operations in the space, or there is a known hazardous substance leaking into or has a good probability of leaking into the space, the requirements prescribed in Section 7 shall also apply.

6.9 If the existence of dangerous air contamination and/or oxygen deficiency is demonstrated by tests performed with existing ventilation in accordance with Paragraph 6.3, the existing ventilation shall be augmented by appropriate means. When it can be demonstrated by tests that the additional ventilation has removed dangerous air contamination and oxygen deficiency, entry into and work within the space may proceed subject to the provisions of Paragraphs 6.8.1 and 6.8.2.

6.10 If oxygen consuming equipment such as salamanders, plumber's torches or furnaces, and the like are to be used, measures shall be taken to ensure adequate combustion air and to exhaust the products of combustion.

7. CONFINED SPACE ENTRY AND OPERATIONS

7.1 The requirements of this section (7) apply to entry into and work within a space whenever the applicable portions of section 6 indicate the atmosphere in the space to be entered is or could be expected to become dangerously contaminated.

7.1.1 Tanks, vessels or other confined spaces with side and top openings shall be entered from side openings when practicable.

7.1.2 Industrial Safety & Hygiene staff approved respiratory equipment and any other protective equipment appropriate for the hazardous substance shall be worn by anyone entering the space.

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

- 7.1.3 An Industrial Safety & Hygiene Staff approved safety belt and lifeline shall be worn and the free end of the lifeline shall be secured outside the entry opening. The line shall be at least $\frac{1}{2}$ " diameter and 2,000 pounds test. (Exception: Where it can be shown that a safety belt and attached line would further endanger the employee's life).
- 7.1.4 If entry must be made through a top opening the safety belt shall be of the harness type that suspends a person in an upright position and a hoisting device or other effective means shall be provided for lifting employees out of the space.
- 7.1.5 At least one employee shall stand by on the outside of the confined space ready to give assistance in case of emergency. At least one additional employee who may have other duties shall be within sight or call of the standby employee.
 - 7.1.5.1 The standby employee shall have appropriate IS&H approved respiratory protective equipment, including an independent source of breathing air available for immediate use. This emergency breathing air shall meet Grade D breathing air specifications as described in Compressed Gas Association Commodity Specifications G-7.1 (ANSI 286.1-1973 or later).
 - 7.1.5.2 The standby employee(s), protected by emergency breathing equipment may enter the confined space but only in case of emergency and only after alerting at least one additional employee, who is outside the confined space, of the existence of the emergency and of the standby employee's intent to enter.
- 7.1.6 At least one person trained in first aid and Cardiopulmonary Resuscitation (CPR) shall be immediately available whenever the use of respiratory protective equipment is required by this section (7). At facility 1 the fire department is available with the equipment and trained personnel to provide assistance.
- 7.1.7 An effective means of communication between employees inside the confined space and a standby employee shall be provided and used whenever the use of respiratory protective equipment is required by this section (7).
- 7.1.8 No source of ignition shall be allowed into a confined space which contains, or is likely to develop, dangerous air contamination due to flammable gas or vapor. Sources of ignition, in addition to the obvious such as open flame,

ENTERING SPACES WITH CONFINED SPACE POTENTIAL

include: lighting, radios and other electrical equipment which are not approved by Industrial Safety & Hygiene to be intrinsically safe or explosion proof for the flammable gas or vapor involved.

8. SPECIAL REQUIREMENTS FOR ENVIRONMENTAL CHAMBERS, CELLS OR ROOMS WHICH ARE PURPOSELY FLOODED WITH INERT GAS SO AS TO CREATE AN OXYGEN DEFICIENT ATMOSPHERE AND MAY BE ENTERED.

8.1 Fixed, regularly and frequently used chambers, cells or rooms which are easily entered shall be equipped with fixed oxygen monitoring equipment, a mechanical exhaust system and a safety interlock system. The interlock system shall not allow inert gas flooding while the space is occupied. It shall also only allow entrance into the space when there is 19.5% or more oxygen in the space. An emergency override system shall be installed which can only be operated by an Industrial Safety & Hygiene XF-91 key.

8.1.1 The using organization supervisor shall be responsible for checking the proper operation of the interlock system, oxygen monitoring equipment and mechanical exhaust system before each operation of the chamber, cell or room.

8.2 Chambers, cells or rooms which are only occasionally flooded with inert gas and/or are not easily and quickly enterable and do not have an interlock system require the use of written Industrial Safety & Hygiene approved test procedures. The test procedures shall require the use of mechanical exhaust ventilation and oxygen testing before personnel are allowed to enter. The procedures shall also require monitoring to ensure at least 19.5% oxygen at all times while personnel are in the space. The oxygen monitoring may be done with a portable oxygen detector.

8.3 Chambers, cells and rooms subject to inert gas flooding on an accident only basis shall be evaluated by Industrial Safety & Hygiene to determine the need for safeguards.

8.4 Emergency entry into the space if there is less than 16% oxygen must only be done by personnel equipped with and trained and qualified in the use of Industrial Safety & Hygiene Approved Self-Contained Breathing Apparatus. LMSC Fire Protection maintains this capability at Facility 1 on a round the clock basis. Dial 117 for emergency response.

COPPER TREATMENT UNIT OPERATING PROCEDURE

I. INTRODUCTION

The Copper Treatment Unit is located at building 151. The unit receives wastewater from the printed circuit board manufacturing area. The unit is designed to remove copper from the rinse waters generated from the processes. The unit accepts wastewater from two sources: the waste sump tank 151-2 and directly from inside the building.

II. GENERAL OPERATIONS

1. Treatment Steps

i. Waste solution enters coarse pH adjustment tank where the pH is maintained between a value of 4.4 and 7.9 .

ii. Waste solution enters fine pH adjustment tank where the pH is maintained at a value of 4.4 and 7.9 .

iii. Solution is pumped through a set of filters and then through two cells of ion exchange bottles and leaves to the rinse water sump for transfer to the ponds.

2. Ion Exchange Bottle Monitoring

The ion exchange bottles need to be monitored to determine when the bottles have reduced removal capacity and need to be changed. The following procedure applies:

i. A sample from 2 or 3 of the bleed valves which follow the first cell is taken and analyzed with the HACH kit. If the level is above 1.5 then go to step ii.

ii. If the first cell is above 1.5 ppm, a BAD tag is placed on one of the bottles of the cell and then a sample of the second cell is taken at a valve at the exit of the second cell and analyzed. If this cell is also above 1.5, then a BAD tag is placed on a bottle of the cell and the flow is diverted to the second set of bottles.

An outside company is responsible for changing the bottles.

3. Routine Maintenance

i. The acid and caustic feed tanks are checked daily. The caustic tank is filled daily and the acid tank when below half full. The volume of the tanks are gallons. The following is the makeup of the feed chemical tanks.

a. Acid: Fill tank half full with water. Add one (1) gallon of sulfuric or hydrochloric (muriatic) acid using face shield and gloves. Add additional water to fill tank.

b. Caustic: Fill tank half full with water. Add five pounds of caustic soda (dry sodium hydroxide) or five gallons of 50% sodium hydroxide liquid using face shield and gloves. Add additional water to fill tank.

ii. The pH probes are calibrated by calibration staff.

4. Monitoring

i. The following items are checked and recorded each day:

-Copper level as measured with a HACH kit.

-Total flow through the unit as indicated on the flow meter of the control panel.

-Level of the supply chemicals in the tanks.

-Comments if bottles were tagged, or any additional items which need to be mentioned for history purposes.

5. Additional Items

In addition to the Copper Treatment Unit, there is a caustic addition system for the Molybdenum processing lab which needs to be filled daily and recorded on Form 204.

[illegible]

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
POND OPERATIONS
OPERATING PROCEDURE (WEEKLY)

Procedure No. 301

Issue Date: 1-5-87

Revision Date: 4-5-87

Written By: *John F. [Signature]*

Approved By: *ARK Willard [Signature]*

EVAPORATION POND INSPECTION PLAN

GENERAL

The Process Wastewater Treatment/Reclamation Facility (PWTRF) Evaporation Ponds were taken out of service in October, 1985, in accordance with the termination of the ISD permit from the California Regional Water Quality Control Board. Both ponds were emptied by October 31, 1985, and the wastewater line from Facility 1 discharging to the ponds was physically disconnected. The ponds are in the process of closure. Following acceptance of the evidence of non-contamination by the California Department of Health Services, the ponds must be inspected and monitored for a period of one year before closure is final.

The following procedures will be used to expedite and document the required monitoring.

PHYSICAL INSPECTION

On a weekly basis, the evaporation ponds will be inspected and, as required, corrective actions will be taken for deficiencies noted. The following items will be inspected:

1. Evidence of Dike cracking
2. Evidence of Dike erosion
3. Evidence of Liner Damage
4. Evidence of Rodent Burrowing
5. Evidence of Unusual Odors/Coloration
6. Evidence of Unusual Water Accumulation

When deficiencies are noted, the following corrective actions will be taken:

1. Dike Cracking or Erosion

After the appropriate engineering study and recommendation, the damaged area will be filled and compacted.

2. Liner Damage

Any breaks or tears in the liners will be repaired.

3. Rodent Burrows

Any rodent burrows affecting dike integrity will be sealed. Poisoned bait will be set out to eradicate rodents in the pond area when fresh burrows are noted.

4. Unusual Odors/Coloration

Source of the problem will be determined and eliminated.

5. Unusual Water Accumulation

The only known sources of input to the Evaporation Ponds are (1) rainfall and (2) return from the leachate sumps. The line from Facility 1, and all interconnecting lines from the Holding Pond/Sewer Discharge system have been physically disconnected. Any unusual accumulation of water in the Evaporation Ponds will be thoroughly investigated, including full chemical analysis of the accumulation, the source isolated, and required actions to eliminate the source taken.

The EVAPORATION POND INSPECTION LOG will be filled out weekly by Hazardous Waste Operations to cover the above inspection items and corrective actions. Any deficiencies found will be corrected promptly; correction documentation will include, at minimum, the following:

1. Description of the problem
2. Corrective action taken or initiated (Maintenance Repair order number, Engineering Request number) and date initiated.
3. Completion statement for items immediately corrected; estimated completion date and actual completion date for longer term corrections.

All correction documentation will be attached and kept with the inspection log on the date the deficiency was found.

RAINFALL

During the winter months, rainwater will accumulate in the closed Evaporation Ponds. This water will be transferred to the Holding Ponds for ultimate discharge to the sewer. This procedure will be done as required, not on a routine schedule.

The following procedures will be followed when rainwater transfers are made:

1. Transfers will be planned before or when the volume in the Evaporation Ponds reaches coverage of the entire floor of the ponds.
2. Both ponds will be sampled, and chemical analysis will be made for heavy metals and pH.

3. Assuming the analysis meets City of Sunnyvale Sewer requirements, the Evaporation Pond rainwater will be transferred, using portable pumps and hoses, to the Holding Ponds.
4. Appropriate data will be entered on the EVAPORATION POND INSPECTION LOG regarding the transfer(s).
5. Weekly approximations of the rainwater volumes in the Evaporation Ponds will also be entered on the EVAPORATION POND INSPECTION LOG.

LEACHATE SUMPS

There are four leachate sumps collecting leachate from between and below the Evaporation Pond liners. The leachate accumulated in these sumps is, as required, pumped back to the Evaporation Ponds.

The following procedures will be used in operating the leachate sumps:

1. The volumes in the leachate sumps will be recorded weekly on the EVAPORATION POND INSPECTION LOG.
2. As required, the sumps will be pumped back to the Evaporation Ponds. Pumping events will be recorded on the EVAPORATION POND INSPECTION LOG.
3. Weekly samples will be taken from the four leachate sumps and analyzed for heavy metals and pH. Laboratory records will be maintained by 0/48-91, and any significant changes from baseline values will be reported to Hazardous Waste Operations.
4. In the event of unusual analytical results, Hazardous Waste Operations will make appropriate investigations and expedite required corrective measures. Actions required will depend on the analysis of the problem based on laboratory results.

COMMENTS

Any additional entries required where there is insufficient space in the inspection form should be added under Comments.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS D/47-30
BUILDING SYSTEMS
OPERATING FORM

Form No. 201 A
Issue Date: 4-7-87
Revision Date:
Written By:
Approved By: *[Signature]*

HAZARDOUS WASTE TANK INVENTORY LOG

MONTH _____ YEAR _____ TANK NO. _____

DATE/DAY	LEVEL (INCHES)	VOLUME (GAL)	COMMENTS - ACTIVITY	SIGNED BY
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

DATE OF LAST EMPTYING _____

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
EVAPORATION PONDS
OPERATING FORM (WEEKLY)

Form No. 301
Issue Date: 1-5-87
Revision Date: 4-3-87
Written By: *[Signature]*
Approved By: *[Signature]*

EVAPORATION POND INSPECTION LOG

DATE _____

INSPECTED BY: _____

PHYSICAL INSPECTION

Write "OK" in space if there are no deficiencies.

Inspection Item	Evidence	Location	Action Req'd/Taken
Dike Cracking			
Dike Erosion			
Liner Damage			
Rodent Burrows			
Odors/Coloration			
Water Accumulation			

RAINFALL

Rainfall Accumulation: East Evaporation Pond _____

West Evaporation Pond _____

Analysis East Evaporation Pond _____

(Parameters exceeding
sewer limitations)

West Evaporation Pond _____

Pumping Events

East Evaporation Pond

To Holding Pond _____ Volume _____

West Evaporation Pond

To Holding Pond _____ Volume _____

LEACHATE SUMPS

Sump Number	Volume		Pumping Events		
	Inches	Gallons	Date	Volume	Evaporation Pond
Sump #1					
Sump #2					
Sump #3					
Sump #4					

COMMENTS

(Use for additional entries if space above is insufficient)

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 401
Issue Date: 1-5-87
Revision Date: 7-6-87
Revision No. 2
Written By: *Jerry J...*
Approved By: *Jerry J...*

HAZARDOUS WASTE DRUM CONTROL SYSTEM

GENERAL

The Hazardous Waste Drum Control System (DCS) is a computerized system established to maintain inventory and status control over all of the 15 and 55 gallon drums used in LMSC's Facility 1 for the collection and temporary storage of hazardous wastes. This procedure covers only hazardous wastes collected in drums issued by Hazardous Waste Operations, 0/47-30.

The DCS system is designed to track individual drums of hazardous waste from the issuing of an empty drum to the generator to the final shipment of the hazardous waste contained in the drum to off-site disposal. The system generates computer runs which provide information to achieve the following:

- o Confirm the return of an issued drum within 30 days of the date of issuance or allow followup to insure the return of the drum.
- o Track the status of the drum while in temporary storage at B/114.
- o Plan disposal shipments to insure that all hazardous waste drum contents are disposed of within 90 days from the date of issuance of the empty drum, the first possible date that accumulation can begin.
- o ALL HAZARDOUS WASTES MUST BE DISPOSED OF WITHIN 90 DAYS OF THE DATE OF FIRST ACCUMULATION IN ACCORDANCE WITH CAC TITLE 22.

The DCS is maintained in B/131 by Hazardous Waste Operations, 0/47-30, and uses, as primary documentation, the LMSC INTERNAL HAZARDOUS WASTE MANIFEST (LIHWM). The manifest is FORM LMSC 5991-1, copy attached.

For specific information on the use of the INTERNAL HAZARDOUS WASTE MANIFEST, see operating procedure LMSC INTERNAL HAZARDOUS WASTE MANIFEST, No. 402.

The following describes the DCS control procedure, designed to maintain, at all stages of the cycle, daily tracking of all containers used to handle hazardous waste within LMSC's Facility 1.

PROCEDURES

1. The INTERNAL HAZARDOUS WASTE MANIFEST is a five-part form

which, at each stage of the handling cycle, provides a hard copy record of the accumulated information on a specific drum of hazardous waste. The LIHWM copies are different colors, and the final custodians of the copies are as follows:

White (Issue Copy)	- Hazardous Waste Operations
Gold (Generator Copy)	- Generating Organization
Pink (Return Copy)	- Hazardous Waste Operations
Yellow (Laboratory Copy)	- Environmental Quality Laboratory
Green (Disposal Copy)	- Hazardous Waste Operations

2. The initial DCS entry is made when a drum is issued at the request of a waste generating organization. When the drum is issued, the LIHWM is attached to the drum, and the white copy of the LIHWM is detached. From this copy, the following information is entered into the system:

- a. Requester Name (Individual)
- b. Organization
- c. Building Number
- d. Requester Telephone Number
- e. Drum Serial Number
- f. Drum Issue Date

Form No. 401 A DRUM PHONE REQUEST/INSPECTION FORM is made out at the time the generator requests drums. The LIHWMs for the drum order are filled out in the B/131 office and given to the Hazardous Waste Operations yard personnel. When the drum order has been assembled, each drum is checked for labeling and drum integrity, the form is signed, and the shipment is sent to the generator. The record of disbursement and inspection is retained by Hazardous Waste Operations.

3. Each container in the system is identified with a permanent stencil indicating the type of material to be collected in the container and an individual serial number. Each container has, accordingly, a unique identity which can be traced by the DCS at any time the drum is active in the system. The drums are used for a single category of hazardous waste. At the time of issue, Hazardous Waste Operations, O/47-30 will inspect each drum to assure that the proper hazardous waste label for the category is affixed.
4. Once issued, the container serial number is held in the "active" files of the DCS. The inventory of "active" drums in each of the waste categories can be recalled and reviewed as required, as well as identifying its location in the system.
5. The initial DCS computer status for drums issued is the "Drum at User Site" status. This record shows all drums which have been issued, but not returned to Hazardous Waste Operations. The status is reviewed weekly to determine the

location of drums which have not been returned within 30 days from date of issue.

The 30 day period is established to insure that the container is returned in ample time to properly dispose of the hazardous wastes collected. The drum must be returned regardless of the amount of waste collected; even if the container has not been used at all, the container must be returned.

Generators holding containers over 30 days are contacted by telephone to insure return of the container. The individual making the call is under the direction and authority of Hazardous Waste Operations, 0/47-30. The followup is made from a listing generated by the DCS, and is performed weekly.

6. When the container is returned, the pink copy of the LIHWM is detached by Hazardous Waste Operations and the data is entered in the DCS. (Note: The gold copy of the LIHWM is detached by the generating organization prior to the return of the drum.) The data, added to the original record, is as follows:
 - a. Date returned
 - b. Type and composition of material contained.
 - c. Any additional information or hazard associated with the waste.
7. The drum record is transferred from the "Drums at the User Site" DCS status to the "Drum Returned/To Be Sampled" status. From the DCS, a report is prepared and printed of all of the drums, by type, which have been returned and are waiting for sampling. This listing is issued to the Environmental Quality Laboratory as a check sheet for insuring all drums which require sampling are properly sampled. At the time the material is actually sampled, the yellow copy of the LIHWM is detached by the sampling personnel and given to Hazardous Waste Operation as a record the drum has been sampled. The date is entered into the DCS. During the period between sampling and the return of the analysis, the DCS system can generate a status report of "Drums Returned and Sampled/To Be Analyzed. This listing is used as a check sheet for both the laboratory and Hazardous Waste Operations.

Sampling and analysis is one of three primary means of determining the proper identification of the hazardous wastes in the drums, the other two being label information and generator information.

See operating procedure HAZARDOUS WASTE IDENTIFICATION, No. 404 for identification procedures. When identification is by means other than sampling and analysis, the DCS record will be changed, for the specific drum, to the "Drums Returned, Sampled and Analyzed" category. Hazardous Waste

Operations personnel will remove the yellow copy for data entry into the DCS system.

When the laboratory report is returned, it is reviewed by Hazardous Waste Control engineers. If there are any exceptions in the laboratory report from the listed generator information on the INTERNAL HAZARDOUS WASTE MANIFEST, a notation is attached to the laboratory report for DCS data entry under "Comments." The existence of "Comments" for the specific drum is shown as an (*) in the "Hazard Code" field in the DCS record.

8. Once the specific container is sampled and analyzed, the results are transmitted by the laboratory to Hazardous Waste Operations and entered into the DCS. The container status is now changed in the DCS to "Drums Returned, Sampled, and Analyzed status, and the drum contents can be shipped to the appropriate off-site disposal or recycle site. See operating procedure No. 405, HAZARDOUS WASTE DISPOSAL, for instructions for shipping.
9. The final step in the DCS system occurs when the container or its contents is shipped for recycle or disposal. The final (green) copy of the LIHWM is removed by Hazardous Waste Operations and the final data is entered into the DCS.

Data includes:

- a. Date of shipment
 - b. Uniform Hazardous Waste Manifest Number
 - c. Date Uniform Hazardous Waste Manifest is transmitted to the State of California.
10. When the last entries are completed for a given drum into the DCS, the entire contents of the record are transferred to the "Off-Site Disposal Archive" file of the DCS for permanent storage. The drum identification number (and the drum itself) is then available for reuse.

The container will, as needed, be reissued to a generator to start the handling cycle again, with a new Internal Hazardous Waste Manifest.

12. Records that can be reviewed on screen, or printed as required, include the following:
 - a. Drums at the User Site Report (A computer run can be made to track drums at the user site for any period or any "window" of dates commencing from the date of issue of the drum, i.e., the drums are tracked throughout the cycle. For control purposes, a computer run is made weekly for drums over 30 days so that the generator can be contacted to return the drum.)
 - b. Drums Returned/To Be Sampled
 - c. Drums Returned and Sampled/To Be Analyzed

- d. Drums Returned, Sampled, and Analyzed (Contents of Drum Ready for Shipment)
 - e. Hazard Code Comments List (The Hazard Flag is a notation on the DCS computer record which indicates that additional information is available on the record which might be useful in planning for disposal. The Hazard Flag is not an integral part of the tracking system, but a mechanism by which other information may be entered on the computer record. The information is entered by authorized Hazardous Waste Operations personnel only.)
 - f. Drums In Use, B/114 and Plant Wide (All Active Drums at any point in the system)
 - g. Off-Site Disposal Archive
13. A weekly computer run is made for all drums over 45 days in the system. Although many of the hazardous waste drums are disposed of in less than 45 days, this listing is made to schedule disposal shipments and insure that no waste is held over 90 days.
14. INTERNAL HAZARDOUS WASTE MANIFEST hard copies are filed and maintained by Hazardous Waste Operations for a period of five years. The DCS computer files are copied daily, or following any significant input of data; the archive file will be also maintained for a period of five years.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING FORM

Form No: 401 A
Issue Date: 4-6-87
Revision Date:
Written By: John F. [Signature]
Approved By: W. J. [Signature]

DRUM PHONE REQUEST/INSPECTION FORM

DATE OF REQUEST _____

NAME OF REQUESTOR _____

EMPLOYEE NUMBER OF REQUESTOR _____

ORGN# _____ PHONE# _____ BLDG# _____ COL# _____

TYPE OF MATERIAL

SIZE OF CONTAINER

NUMBER OF
CONTAINERS

15 GAL

55 GAL

A (ACIDS) ☐

B (BASES) ☐

C (CYANIDE) ☐

E (OILS) ☐

F (FLAMMABLE) ☐

N (NON-FLAMMABLE SOLVENTS) ☐

OT (OPEN TOP) ☐

PM (PRECIOUS METAL) ☐

RC (RED CANS) ☐

SHIP TO: _____

*SPECIAL COMMENTS: _____

EACH DRUM ISSUED ON THIS ORDER HAS BEEN INSPECTED FOR STRUCTURAL INTEGRITY AND THE BUNGS, CAPS, OR COVERS ARE FREE OF DEFECTS AND PROPERLY SEALED. EACH DRUM ON THIS ORDER IS MARKED WITH A PERMANENT STENCIL OF WASTE TYPE AND INDIVIDUAL IDENTIFICATION NUMBER, HAS A SAFETY WARNING LABEL FOR THE TYPE OF MATERIAL AFFIXED, AND HAS A PROPERLY FILLED IN LMSC INTERNAL WASTE MANIFEST IN A PLASTIC ENVELOPE AFFIXED, WITH THE MANIFEST INFORMATION CLEARLY VISIBLE.

SIGNED _____ DATE _____

**UNIFORM HAZARDOUS
WASTE MANIFEST**

1. Generator's US EPA ID No.

Manifest
Document No.2. Page 1
ofInformation in the shaded areas
is not required by Federal
law.

Generator's Name and Mailing Address

A. State Manifest Document Number

86350568

B. State Generator's ID

4. Generator's Phone ()

5. Transporter 1 Company Name

6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

13. Total
Quantity14. Unit
Wt/Vol

1. Waste No.

a.

b.

c.

d.

Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name

Signature

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

SAMPLES OF DCS COMPUTER REPORTS

DRUM CONTROL SYSTEM
DRUMS AT THE USER SITE
AGE: 1 DAY(S) AND OLDER
March 29, 1987

DRUM ID	SENT OUT	CONTACT	PHONE	ORGN	BLDG	HAZ	COL
A -028	03/06/87	ELLIS LEW	2-7641	85-83	153		
A -032	03/13/87	ANDERSON WAYNE	3-1997	71-51	151		
A -035	03/09/87	GUBBER STEVE	6-3228	48-92	1958		

DRUM CONTROL SYSTEM
DRUMS RETURNED/TO BE SAMPLED
AGE: 1 DAY(S) AND OLDER
March 29, 1987

NAME: _____

DATE: _____

DRUM ID	SENT OUT	CONTACT	BLDG	SAMPLE NO.	COMMENTS
A -015	03/13/87	ANDERSON WAYNE	151	_____	_____
A -018	03/19/87	KOPPERUD ROYAL	131	_____	_____
A -040	03/16/87	ANDERSON WAYNE	151	_____	_____

DRUM CONTROL SYSTEM
DRUMS RETURNED AND SAMPLED/TO BE ANALYZED
AGE: 1 DAY(S) AND OLDER
March 29, 1987

NAME: _____

DATE: _____

DRUM ID	SENT OUT	CONTACT	HAZ	BLDG	SAMPLE NO.	COMMENTS
A -045	03/02/87	ANDERSON WAYNE		151	BZA2	_____

DRUM CONTROL SYSTEM
 DRUMS RETURNED, SAMPLED AND ANALYZED
 AGE: 1 DAY(S) AND OLDER
 March 29, 1987

DRUM ID	SENT OUT	CONTACT	PHONE	ORGN	BLDG	HAZ	COL	SAMPLED DATE	SAMPLE NUMBER
A -001	03/02/87	ANDERSON WAYNE	3-1997	71-51	151	*		03/20/87	XZEA
A -002	03/10/87	ANDERSON WAYNE	3-1997	71-51	151			03/25/87	XZEA2
A -007	01/26/87	ROME JOHN	6-5147	71-51	153A			03/25/87	XZEA2
A -009	03/05/87	ANDERSON WAYNE	3-1997	71-51	151			03/20/87	XZEA
A -016	03/13/87	ANDERSON WAYNE	3-1997	71-51	151			03/25/87	XZEA1
A -023	03/05/87	ANDERSON WAYNE	3-1997	71-51	151			03/20/87	XZEA
A -025	02/09/87	GLIBBER STEVE	6-3228	48-92	195B			03/20/87	XZEA
A -030	03/10/87	ANDERSON WAYNE	3-1997	71-51	151			03/25/87	XZEA2
A -043	03/05/87	ANDERSON WAYNE	3-1997	71-51	151			03/25	

DRUM CONTROL SYSTEM
HAZARD CODE (*) COMMENTS LIST
March 29, 1987

DRUM ID	STATUS	COMMENT
A -001	AN	THIS IS A TEST RECORD TO DEMONSTRATE THE APPEARANCE OF THE COMMENTS FOR A DRUM MARKED WITH A "HAZARD CODE"

DRUM CONTROL SYSTEM
DRUMS IN USE, B/114 AND PLANT WIDE
March 29, 1987

JM ID	SENT OUT	CONTACT	PHONE	ORGN	BLDG	HAZ	ST
A -001	03/02/87	ANDERSON WAYNE	3-1997	71-51	151	*	AN
A -002	03/10/87	ANDERSON WAYNE	3-1997	71-51	151		AN
A -007	01/26/87	ROWE JOHN	6-5147	71-51	153A		AN
A -009	03/05/87	ANDERSON WAYNE	3-1997	71-51	151		AN

DRUM CONTROL SYSTEM
OFF-SITE DISPOSAL ARCHIVE
AGE: 1 DAY(S) AND OLDER
March 29, 1987

DRUM ID	SENT OUT	CONTACT	PHONE	ORGN	BLOB	FAC	HAZ	DISPOSAL DATE	MANIFEST NUMBER
A -225	12/01/86	MIKE HADLEY	3-1997	71-51	151	1		01/06/87	86416818
A -004	12/16/86	MANUEL TEIXERA	3-1997	71-51	151	1	*	01/09/87	

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 403
Issue Date: 4-7-87
Revision Date: 8-3-87
Revision No. 2

Written By: *Jimmy Fader*

Approved By: *W. J. Fader*

HAZARDOUS WASTE DRUM INSPECTION AND LABELING

GENERAL

Each drum or container used to contain hazardous waste must be labeled or stenciled clearly and visibly as "HAZARDOUS WASTE" and must, at all times, be properly labeled and free of structural defects which could result in leakage. When not in actual use (filling or emptying the container), the top, bung, or cap must be in place and tightly closed.

Any container used for the accumulation or storage of hazardous waste must have clearly visible labeling with the following information showing:

1. Statement of composition and physical state
2. Safety warning and precautions for safe handling
3. Statement of particular hazards
4. Date of the start of accumulation.
5. Description of contents in specific terms
6. Name of generator
7. Clear identification of contents as "hazardous waste". This identification as found on the INTERNAL HAZARDOUS WASTE MANIFEST title in bold letters, and on the separately affixed HAZARDOUS WASTE label.

The above labeling is required to conform to CAC Title 22.

The following procedure defines the requirements and responsibilities for proper labeling and maintenance of the container integrity.

PROCEDURE

LABELING

1. At LMSC Facility 1, labeling is to be accomplished as follows:
 1. All hazardous wastes will be accumulated in containers provided by Hazardous Waste Operations, 0/47-30, or in approved safety containers.
 2. Each container will have a safety label affixed which shows the type of material being collected, safe handling precautions, special hazards, and physical state. The

label is to be on the container at all times when being used for the accumulation of hazardous wastes.

Safety labels will be inspected or affixed by Hazardous Waste Operations for all drums requested by generators for the collections of hazardous wastes. These are the drums identified by type and individual serial number, and are controlled by Hazardous Waste Operations.

Containers not within the control system, such as safety containers, must be labeled by the generating organizations.

THE SAFETY LABEL AFFIXED TO THE CONTAINER DESCRIBES THE TYPE AND HAZARDS OF THE WASTE TO BE ACCUMULATED. ONLY THE DESCRIBED WASTE IS TO BE ACCUMULATED. UNDER NO CIRCUMSTANCES MAY THE LABEL BE ALTERED, OR THE CONTAINER USED FOR ANY WASTE OTHER THAN THAT DESCRIBED ON THE SAFETY LABEL.

3. Each container will be labeled, or will be manifested, to show the date of first accumulation of waste.
 1. When a hazardous waste drum is requested from Hazardous Waste Operations, the date of first accumulation is the date the drum is issued to the generator.
 2. If the waste is being collected in a container not issued by Hazardous Waste Operations, e.g., a small safety can, the date of first accumulation must be provided on a label by the generator.

NO HAZARDOUS WASTE MAY BE STORED FOR MORE THAN 90 DAYS. THE DATE OF FIRST ACCUMULATION DEFINES THE START OF THE 90 DAY PERIOD.

4. Drums issued by Hazardous Waste Operations will have a permanent stencil defining the type of waste to be collected in the drum and the individual serial number for the drum. Categories of waste drums are as follows:

A-XXX	Acid wastes
B-XXX	Basic Wastes
C-XXX	Cyanide Wastes
E-XXX	Oil Wastes
F-XXX	Flammable Wastes
N-XXX	Non-Flammable Solvent Wastes
OT-XXX	Solid Wastes
PM-XXX	Precious Metal Solutions
RC-XXX	Small Quantity Safety Cans

NO WASTE MAY BE ACCUMULATED IN A NUMBERED DRUM OTHER THAN THE TYPE SHOWN ON THE PERMANENT IDENTIFICATION FOR THE DRUM. UNDER NO CIRCUMSTANCES IS THE PERMANENT IDENTIFICATION TO BE ALTERED TO COLLECT WASTE OF A

DIFFERENT CATEGORY.

5. During the period of accumulation, each addition of waste to the container must be recorded in specific detail so that the contents of the container are known at all times.

1. For drums within the control system issued by Hazardous Waste Operations, each addition to the drum must be entered on the INTERNAL HAZARDOUS WASTE MANIFEST by the generator. Recording the input to the container will provide a current description of the drum contents. The manifest is in a plastic envelope affixed to the drum. The opening of the envelope must be facing the side to prevent either collecting rainwater or risking the manifest falling out.

THE INTERNAL HAZARDOUS WASTE MANIFEST IS TO REMAIN IN THE ENVELOPE AT ALL TIMES EXCEPT WHEN ACTUALLY FILLING IN THE REQUIRED INFORMATION. THE MANIFEST IS NOT TO BE REMOVED FROM THE DRUM OR HELD IN ANOTHER AREA DURING THE PERIOD OF ACCUMULATION. THE INTERNAL HAZARDOUS WASTE MANIFEST WILL BE PLACED IN THE ENVELOPE SUCH THAT THE ENTIRE FRONT FACE IS VISIBLE. DO NOT FOLD.

THE INTERNAL HAZARDOUS WASTE MANIFEST CONSTITUTES A LABEL, AND THE FACE OF THE MANIFEST, WITH THE BOLD PRINTED "HAZARDOUS WASTE" MUST BE CLEARLY VISIBLE AT ALL TIMES.

2. For wastes added to safety containers, the generator is required to document each addition of waste to the container and the document must remain on the container at all times.

RESPONSIBILITIES FOR LABELING

1. Hazardous Waste Operations is responsible for the following elements of hazardous waste container labeling:

1. Stenciling permanent category and serial numbers on drums issued for the collection of hazardous wastes.

Each drum will be inspected at the time of issuing to a generator to insure permanent stencil is on the drum and is clear and visible. As required, drums will be restenciled to insure positive identification. No drum will be issued without a clear and legible identification number.

2. Insuring that the proper safety label is affixed to the drum. The label must be legible, and must conform to the category of waste stenciled on the drum.

Each drum will be inspected at the time of issuing to a generator to insure the proper safety label is affixed to the drum. If missing or illegible, the a new label will be

affixed. No drum will be issued without a clear and legible safety label.

3. Insuring that the INTERNAL HAZARDOUS WASTE MANIFEST disbursed with the drum is filled out with the required information and that the drum number and type on the manifest matches the identification number and safety label on the empty drum.
4. When the drum is returned from the generator, it will be inspected for the the following:
 1. Safety label matching drum type
 2. INTERNAL HAZARDOUS WASTE MANIFEST in plastic envelope on the drum. Manifest properly filled in, including all necessary information on contents.

If deficiencies are noted, corrective action will be taken.

1. The generator will be called to supply any missing information on the INTERNAL HAZARDOUS WASTE MANIFEST.
2. The drum will be returned to the generator if the INTERNAL HAZARDOUS WASTE MANIFEST is missing, or the drum does not have a proper safety label.

5. At time of disposal shipment, the final copy of the INTERNAL HAZARDOUS WASTE MANIFEST will be removed from the drum, and the required labels and manifests for disposal shipment affixed. See procedure HAZARDOUS WASTE DISPOSAL, No. 405.

2. The generator is responsible for the following elements of hazardous waste container labeling:
 1. Inspect hazardous waste drum when received to insure (1) proper safety label, (2) proper identification on drum for the waste to be collected, and (3) INTERNAL HAZARDOUS WASTE MANIFEST correctly filled in in envelope on the drum.
 2. As the drum is used, each addition of waste is recorded on the INTERNAL HAZARDOUS WASTE MANIFEST, including specific information on each material accumulated.
 3. The drum is returned to Hazardous Waste Operations within 30 days of issuance.
 4. When the drum is returned, all elements of Item 1. above are rechecked, the gold copy of the INTERNAL HAZARDOUS WASTE MANIFEST is removed for file, and the manifest is signed by the generator.

DRUM INSPECTION

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 402
Issue Date: 1-5-87

Revision Date: 4-7-87

Written By: *[Signature]*

Approved By: *[Signature]*

LMSC INTERNAL HAZARDOUS WASTE MANIFEST

GENERAL

The INTERNAL HAZARDOUS WASTE MANIFEST is the primary internal document for the handling of drummed hazardous wastes within LMSC Facility 1 at Sunnyvale. This document is not to be confused with the UNIFORM HAZARDOUS WASTE MANIFEST, which is used and required for off-site disposal shipments. The INTERNAL HAZARDOUS WASTE MANIFEST is FORM LMSC 5991-1, copy attached.

The INTERNAL HAZARDOUS WASTE MANIFEST must accompany all drums of hazardous waste within Facility 1 at all times, until such time as the waste is disposed of off-site. The following description and procedure must be followed in utilizing the INTERNAL HAZARDOUS WASTE MANIFEST.

The INTERNAL HAZARDOUS WASTE MANIFEST is a five part form. The purpose of the INTERNAL HAZARDOUS WASTE MANIFEST is to maintain control over every hazardous waste drum in LMSC's Facility 1 by entering the data on the manifest into the DRUM CONTROL SYSTEM, a computerized control program maintained by Hazardous Waste Operations, 0/47-30. See operating procedure No. 401, HAZARDOUS WASTE DRUM CONTROL SYSTEM.

PROCEDURE

1. Hazardous Waste Operations, B/131, will maintain an inventory of the INTERNAL HAZARDOUS WASTE MANIFEST forms.
2. Empty waste containers can be requested by calling Hazardous Waste Operations, 0/47-30 at 3-7249 or 2-1394. When a request for containers is received, the following information must be given by the requester (generator) for entry onto the manifest or shipping tag:
 - a. Requester's name, employee number, organization, building number, column number, and telephone number. Column number is the location within the building, as defined on the location map for the building, where the drum is to be used.
 - b. Type, quantity, and size of container(s) requested.
3. Hazardous Waste Operations will fill in the following information on the Internal Hazardous Waste Manifest:
 - a. Generator information

- o Name of requester
 - o Employee number of requester
 - o Organization of requester
 - o Building number of requester
 - o Telephone number of requester
- b. Comments
- o Note any unusual requirements or conditions
- c. Drum Information
- o Drum Serial Number (Permanent Number stenciled on drum)
- d. Dates
- o Issue Date
 - o Date container is to be returned. Note: this date is thirty (30) days from the date of issue.

NOTE: EACH CONTAINER HAS PERMANENT WARNING LABELS AFFIXED TO THE CONTAINER WHICH DESCRIBES THE TYPE AND HAZARDS OF THE WASTE TO BE ACCUMULATED. ONLY THE DESCRIBED WASTE IS TO BE ACCUMULATED IN THE CONTAINER. UNDER NO CIRCUMSTANCES MAY THE PERMANENT IDENTIFICATION ON THE CONTAINER BE ALTERED, OR THE CONTAINER USED FOR ANY WASTE OTHER THAN DESCRIBED BY THE WARNING LABEL AND THE PERMANENT IDENTIFICATION.

4. The WHITE copy of the INTERNAL HAZARDOUS WASTE MANIFEST will be removed and retained by Hazardous Waste Operations for entry into the DCS, and for the maintenance of an open, hard copy file.
5. The remaining four copies of the INTERNAL HAZARDOUS WASTE MANIFEST will be placed in a plastic envelope on the proper drum. The drum will then be transported to the requested generation point.
6. IT IS CRITICAL TO NOTE THAT THE THIRTY DAY PERIOD FOR WASTE ACCUMULATION COMMENCES ON THE DATE OF ISSUE OF THE DRUM TO A SPECIFIC GENERATOR, NOT ON THE DATE THAT WASTE IS FIRST PLACED IN THE DRUM.

THE DRUM MUST BE RETURNED TO HAZARDOUS WASTE OPERATIONS WITHIN 30 DAYS, WHETHER THE DRUM IS FULL, PARTIALLY FULL, OR EMPTY.

7. IT IS ALSO CRITICAL THAT THE INTERNAL HAZARDOUS WASTE MANIFEST REMAINS IN THE ENVELOPE AT ALL TIMES, EXCEPT WHEN FILLING IN THE REQUIRED INFORMATION. THE INTERNAL HAZARDOUS WASTE MANIFEST IS NOT TO BE SEPARATED FROM THE DRUM, OR HELD AT ANOTHER LOCATION DURING THE ACCUMULATION PERIOD. FURTHER, THE INTERNAL HAZARDOUS WASTE MANIFEST MUST BE PLACED IN THE ENVELOPE SUCH AS THE ENTIRE FRONT FACE IS VISIBLE. DO NOT

EQLD.

8. When the drum is full, or the 30 day period has expired, the generator will fill in the following information on the Internal Hazardous Waste Manifest:
 - o Quantity of waste
 - o Type of waste
 - o Physical state of waste, liquid or solid (Note: No gaseous wastes are placed in drums; the space for this item will be eliminated on the next printing of the INTERNAL HAZARDOUS WASTE MANIFEST)
 - o Components, concentrations, or the EPS number of the waste. The EPS number is the 5 digit number for the virgin material documented in the LMSC procurement catalog.
 - o Any pertinent comments on the waste
9. When the information is completed, the generator will remove the GOLD copy of the Internal Hazardous Waste Manifest and retain for file.
10. The manifested drum must be securely sealed, a shipment tag attached, and transported to Hazardous Waste Operations at B/114 by Transportation. The shipment tag requires all of the information necessary to have the drum picked up and delivered to B/114; it must be properly filled in to assure proper delivery of the waste. The shipment tag is LMSC FORM 5080-2, copy attached.
11. At B/114, the container will be placed in the segregated storage area for the type of waste. There are eleven segregated holding areas, designated A through K. Each area is used for storage of one category of waste, with only compatible wastes being stored in the same area. Category and container types received at B/114 include the following:
 - A Drums - Acid Wastes
 - B Drums - Basic Wastes
 - C Drums - Cyanide Wastes
 - E Drums - Oil Wastes
 - F Drums - Flammable Wastes
 - N Drums - Non-flammable Solvent Wastes
 - OT Drums - Solid Wastes
 - PM Drums - Precious Metal Wastes
 - RC Cans - Small Quantity Solvent Cans

Each segregated area is identified with a sign and hazard warning as to the type of waste being held. Since each area is identical in design and construction, it may be used as needed for any category of waste; however, and in all circumstances, an individual area will be used for only one type of compatible waste at any time, and the area will be so identified.

Each storage area is approximately 400 square feet in size,

separated from adjacent areas by a concrete block wall six feet in height. Each area is sloped to the rear, and the concrete floor and curbs are coated with a chemically resistant coating. At the rear of each area is a small sump for the collection of any spills or leaks in the area. The sloped floor of each area, with the attached curbing, provides a containment volume equal to 150% of the largest container to be held in the area, or 10% of the aggregate capacity of the containers stored in the area, whichever is larger.

The areas utilized for oils and flammable solvents are separated from the other areas by a full height 4 hour fire wall. The entire facility is protected by a fire sprinkler system. The facility meets all City of Sunnyvale building code requirements for the storage of hazardous materials, including segregation, fire protection, secondary containment, and coating-protected concrete. Each area has a working capacity of 60 55-gallon drums and a maximum capacity of 100 drums.

12. Once received in the Containerized Waste Facility, only the top copy of the INTERNAL HAZARDOUS WASTE MANIFEST is visible in the envelope on the drum. The color of the copy indicates the status of the drum while in temporary storage; pink (receiving copy), yellow (sampling/identification copy), green (ready for shipment).
13. As noted above, the container will be placed in the proper holding area for the waste type. The PINK copy of the Internal Hazardous Waste Manifest is removed when the container is placed in segregated storage. This is the "return" copy for Hazardous Waste Operations and will be matched with the WHITE issue copy in the Hazardous Waste Operations office in B/131. The "return" information will be entered in the DCS. The WHITE and PINK copies, stapled together, are the "hard copy" records for inventory in the Containerized Hazardous Waste Holding Facility awaiting disposal.
14. The YELLOW copy of the INTERNAL HAZARDOUS WASTE MANIFEST will be removed at the time the drum is sampled or positively identified as to content; the copy is given to Hazardous Waste Operations as a record copy when a drum is sampled; when identification is by other means, the copy is taken by Hazardous Waste Operations personnel. In either case, the copy is used for the "sampling" entry in the DRUM CONTROL SYSTEM.
15. At the time the container is shipped off-site for disposal, the final GREEN copy is removed from the envelope. This is matched with the WHITE and PINK copies, the final information is entered in the DCS, and the three Waste Control copies are filed.

NOTE: BEFORE THE CONTAINER IS SHIPPED, OR AFTER IT HAS BEEN

EMPTIED INTO A TANK TRUCK, ALL COPIES OF THE MANIFEST ARE
REMOVED FROM THE ENVELOPE. THE INTERNAL HAZARDOUS
WASTE MANIFEST IDENTIFICATION IS REPLACED BY REQUIRED
LABELING FOR OFF-SITE SHIPMENT, AND IS MANIFESTED ON
A UNIFORM HAZARDOUS WASTE MANIFEST. SEE PROCEDURE NO.
405 "HAZARDOUS WASTE DISPOSAL".

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 404
Issue Date: 4-7-87

Revision Date:

Written By: *John J. [Signature]*

Approved By: *Allen [Signature]*

HAZARDOUS WASTE IDENTIFICATION

GENERAL

The identification of hazardous wastes is necessary for proper safe handling, storage and segregation, and disposal. The identification of wastes must include, for disposal, (1) D.O.T Proper Shipping Name, including N.A or U.N. code number, (2) Hazard Classification, and (3) EPA ID No. Primary source document for the above identification items is 49 CFR 172.101.

For the identification LMSC Facility 1 hazardous wastes, the following source information and resources are utilized:

1. Label information
2. Generator description
3. Laboratory analysis
4. Visual Inspection
5. Field analysis

PROCEDURE

CONTAINERS WITHIN THE DRUM CONTROL SYSTEM

1. For a full description of the DRUM CONTROL SYSTEM see the following procedures:

HAZARDOUS WASTE DRUM CONTROL SYSTEM, NO. 401
LMSC INTERNAL WASTE MANIFEST, NO. 402

2. When requesting a drum for the accumulation of hazardous waste the generator must specify the category of waste to be accumulated from the following types:

A Drums	- Acid Wastes
B Drums	- Basic Wastes
C Drums	- Cyanide Wastes
E Drums	- Oil Wastes
F Drums	- Flammable Wastes
N Drums	- Non-Flammable Solvent Wastes
OT Drums	- Solid Wastes
PM Drums	- Precious Metal Wastes
RC Cans	- Small Quantity Solvent Cans

For the OT Drums, the generator must also specify the type of waste to be accumulated, as the drums are used for accumulation of any of the other categories.

3. The drum issued must be labeled according to the waste to be accumulated at all times. See procedure

HAZARDOUS WASTE DRUM INSPECTION AND LABELING, NO. 403

4. The generator must fill in the INTERNAL HAZARDOUS WASTE MANIFEST during accumulation with each addition to the drum, and the manifest information must be complete when the drum is returned to Hazardous Waste Operations at B/114.

HAZARDOUS WASTE IDENTIFICATION METHODS

1. The generator is responsible for filling in the INTERNAL HAZARDOUS WASTE MANIFEST with as complete a description of the waste in the drum as his information permits. The information will come from specific knowledge of the hazardous materials used in the specific process, label information, by-products produced in the process, contamination introduced in the process, or similar information.

The INTERNAL HAZARDOUS WASTE MANIFEST filled in by the generator provides the primary, and most important, data for determination of disposal option.

2. A second method utilized for hazardous waste identification is laboratory analysis. Analysis is utilized when the INTERNAL HAZARDOUS WASTE MANIFEST information requires additional amplification.

Sampling and analysis are performed in the following specific instances for identification of potential disposal problems

1. Each A (Acid) drum is sampled and a composite of 10 drums is analyzed for Beryllium. The reason for this analysis is that the current disposal contractor, IT Corporation, cannot accept acid wastes with a Be content above 0.5 mg/l. If the composite sample from the A drums is over the Be limit, each of the individual drum samples is analyzed to detect the drum, or drums with the high content. These drums are then isolated and disposed of separately, not with the "normal" acid waste shipments.
2. Each E (Oil) drum is sampled and a composite of 10 drums is analyzed for the presence of PCBs or Beryllium. The presence of either of these contaminants precludes disposal with normal oil wastes. If either of the contaminants are detected in the composite, each of the 10 individual samples making up the composite are analyzed to isolate the drum or drums with the PCB or Be content; these drums are then isolated and disposed of separately, not with the normal oil waste shipments.
3. Sampling and analysis for specific drums will be performed when other means of identification indicate the need, i.e., when positive identification is not available from

label information or generator information.

4. Sampling is performed by the O/47-10 , Environmental Analysis, in accordance with the attached procedures. Analysis is performed by O/48-91, Environmental Quality Laboratory, which has been certified by the Department of Health Services to perform analysis required for the identification of hazardous wastes.
5. Sample results are returned to Hazardous Waste Operations for use in identification of hazardous wastes and selection of proper disposal options. See sample laboratory report attached.
3. When available, manufacturers label information is utilized. This will not normally be available on drums within the Drum Control system, but is a primary identification method for surplus and obsolete containerized wastes.
4. Visual analysis is used to augment generators information for specific situations. Examples are water in oil, identification of water-soluble coolants in oil drums vs. petroleum-based oils, color, and similar instances when visual observation will confirm available information.
5. Field checks for pH are made to confirm generator's manifest information for specific instances when the generator information requires confirmation on A (Acid), B (Base) or C (Cyanide) drums. If further identification is needed, sampling and analysis is required.
6. POSITIVE IDENTIFICATION OF THE HAZARDOUS WASTE MUST BE MADE PRIOR TO SELECTING DISPOSAL OPTION. IDENTIFYING OR CONFIRMING LABORATORY ANALYSIS WILL BE UTILIZED WHEN POSITIVE IDENTIFICATION IS NO DETERMINED BY LABEL OR GENERATOR INFORMATION.

SAMPLING PROCEDURE AND LABORATORY REPORT

PROCEDURE FOR SAMPLING WASTE DRUMS AT THE HAZARDOUS WASTE HOLDING FACILITY
BLDG. 114

Purpose

Sampling incoming waste drums provides data necessary for proper disposal of LMSC's containerized waste.

References

Samplers and Sampling Procedures for Hazardous Waste Streams (EPA-600/2-80-018)
Test Methods for Evaluating Solid Waste, Physical and Chemical Methods
(EPA-SW-846)

Equipment

Bung wrench
Coli-wasa
Trier
Thief
Sample bottles, labels
Bldg. 114 unsampled drum list from 0/47-30's Drum Control System
Protective wear: gloves, safety glasses, goggles, face shields, respirators, coveralls

Procedures

RECORD KEEPING

1. An updated list of unsampled drums is received from Waste Control Operations (0/47-30) prior to sampling.
2. As a drum is sampled it is marked off the unsampled drum list. The canary copy of the waste manifest is removed and given to Waste Control Operations. At the end of the day a copy of the unsampled drum list, updated by sampling personnel, is returned to Waste Control Operations.

DRUM SAMPLING -- LIQUIDS OR SLURRIES

1. One bung is removed using an appropriate bung wrench. The sample is collected using a coli-wasa, which removes a vertical column of liquid. This allows for representative sampling of multi-phase liquids. See procedure SAMP-03.2 for specific instructions on use of a coli-wasa.
2. The contents of the coli-wasa are placed into a sample bottle, which is capped and labeled with a proper source and date code. Polyethylene bottles with polypropylene caps are used in most cases. Glass bottles are occasionally used when no danger of reaction with waste material is possible. Glass is never used when sampling acids because of the possibility of encountering hydrofluoric acid.

3. After sampling, all bungs are replaced and tightened with a bung wrench.
4. Usually composite samples (made from ten to twenty individual drum samples) are submitted to the lab for analysis.

DRUM SAMPLING -- SLUDGES, MOIST POWDERS, OR GRANULES

1. Sample is collected using a trier. The trier is inserted into the waste material at an angle of 45 or less degrees from vertical. The trier is rotated as it is inserted. It is removed with the concave side up.
2. The contents of the trier are placed into a sample bottle, which is capped and labeled with a proper source and date code. Polyethylene bottles with polypropylene caps are used in most cases. Glass bottles are occasionally used when no danger of reaction with waste material is possible.
3. After sampling, the top of the drum is replaced and secured.

DRUM SAMPLING -- DRY POWDERS OR GRANULES

1. Sample is collected using a thief. The thief is inserted into the waste material while in the closed position. The inner tube is rotated to open the thief. The thief is agitated to allow material to enter the chamber. The thief is closed and removed.
2. The contents of the thief are placed into a sample bottle, which is capped and labeled with a proper source and date code. Polyethylene bottles with polypropylene caps are used in most cases. Glass bottles are occasionally used when no danger of reaction with waste material is possible.

LABORATORY ANALYSIS AND HOLDINGS TIMES

1. Samples are submitted to the laboratory either the day of collection or are held in a locked sample storage cabinet and submitted the following working day.
2. In general the following laboratory analyses are requested to characterize the wastes:

<u>DRUM TYPE</u>	<u>PARAMETER</u>
Acids:	Beryllium
Cyanides:	Cyanide
Oils:	Beryllium, PCB's
Precious Metals:	Total Metals

Hold samples for other waste materials are also taken upon request of Waste Control Operations.

3. Following analysis, samples are retained in the locked storage cabinet until one month after the haul-away date.



TASK NO.	REV.	LASCODE	TYPECODE
3007.40		WAST	91

PART NAME / BRAND	DESCRIPTION	PART NUMBER	SUPPLIER SOURCE / CODE
WATER	OIL	OIL	B/117 OIL DRUMS

INFO. DATE	LOT-HEAT / BATCH-MELT NO.	DIVISION / PROGRAM	TOT	CLASS	ORDER	AUTHORITY	SEGMENT
				50	01C4	4891	

INFORMATION REQUESTED	1# CONTAINERS	ANALYSES REQUIRED (check)	1 LOCATION
1#	1	1	1

TR	IS	IB	IL	IE	I	ID	A	O	C	L	E	P	S	S	S	S	P	T	N	D	O	L	T	E							
Y	E	V	Y	Y	Y	R	Y	Y	L	I	V	I	E	Y	Y	C	O	U	Y	Y	Y	C	Y	I	I	/	I	N	I	L	R
I	S	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	T	I	R	I	P	K	S	B	I	D	A	S	I	D	Y	
Y	Y	Y	Y	Y	Y	Y	Y	Y	I	H	M	M	M	M	Y	Y	C	O	U	X	I	O	Y	Y	E	L	Y	I	S	Y	
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	E	E	E	E	E	E	Y	Y	I	R	T	I	Y	Y	Y	I	K	Y	Y	Y	Y	
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	I	T	I	T	I	T	Y	Y	Y	C	O	Y	L	Y	Y	Y	Y	Y	Y	Y	Y	
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

BEG 20
No 2

Sampled by: HOLTENAU 10/48-91 Received by: 10/48-91

Kauai, Hawaii		2-26-87	4:31	1	1	1	1
Relinquished by:		Date/Time	Received by:		Date		

CONFIDENTIAL

TYPE: Grab; Autosampler; Discrete; Composite; Mixed; Not Representa

COMMENTS	EE DRUMS IN COMPASS ONLY PAGE 2	INFO ONLY	1
		TD SPEC	
		NOT TO SPEC	

PREPARED BY	DATE	APPROVED BY	Lab Supervisor	DATE	NCR NO.
Y. J. J.	1/2/80	[Signature]	[Signature]	1/2/80	

20090901	09/01/01	48-91	BLDG 195B	FACILITY 1	EXTENSION 63302/3
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[illegible]



LABORATORY REPORT
MATERIAL AND PROCESS CONTROL
CENTER LABORATORIES

PAGE 2 of 3

TASK NO. 300740		REV.	LAB CODE WAST	TYPE CODE 91
EMPLOYEE ID J02982	ORGN 48-91	BLOG 195B	EXTENSION 30400	LOG IN DATE 2-26-87
NAME / SAMPLE DESCRIPTION WASTE OIL		PART NUMBER OILS		
SUPPLIER SOURCE / CODE B/114 Oil Drums				
RECEIVED	SUBMITTED	RETURNED	RECEIVING MEMO	
PURCHASE ORDER NO.		SHOP ORDER NO.		
DATE	LOT-HEAT / BATCH-MELT NO.	DIVISION / PROGRAM	LOT	CLASS 50
WORK ORDER 01C4		AUTHORITY 4891	SEGMENT	
REV				SPECIFICATION (3)

E0225EE1

E380

E381

E382

E383

XZ0225EE2

E305

E316

E353

E354

E369

E371

E375

XZ0226EE1

E097

E1327

E317

E340

E348

E358

E362

E378

E379

E087

XZ0226EE2

E015

E018

E084

E105

E318

E335

E338

E376

E377

E364

XZ0226EE3

E002

E022

E038

E309

E319

E357

E359

E392

E393

Waste Oil drum

XZ0226EE4

E607

E301

E355

E367

E388

E389

E037

Red Shell oil drum



LABORATORY REPORT
MATERIAL AND PROCESS CONTROL
CENTER LABORATORIES

Page 3 of 3

TASK NO.		REV.	LABCODE	TYPECODE
30074				91
RECEIVED		EMPLOYEE	DATE	EXTENSION
3/16/87		3/16/87	3/16/87	3/16/87
LOG IN DATE		REQUIRED DATE		
3/16/87		3/17/87		
PART NAME / SAMPLE DESCRIPTION		PART NUMBER		SUPPLIER SOURCE / CODE
EPA # A-1 S-M-1				211012-2000
NO. RECEIVED	SUBMITTED	RETURNED	RECEIVING MEMO	PURCHASE ORDER NO.
SHOP ORDER NO.				
MFG. DATE	LOT-HEAT / BATCH-MELT NO.	DIVISION / PROGRAM	TOI	CLASS
				50
WORK ORDER	AUTHORITY	SEGMENT		
50	4891			
SPECIFICATION (1)	REV	SPECIFICATION (2)	REV	SPECIFICATION (3)
EPA # A-1 S-M-1				
INFORMATION REQUESTED				
PCB's (EPA Method 606), (EPA Method 606)				
%				
CHLORIDE				
XZ0225EE1 42 ppm 511 Sk-lag				
2316/199				
3/13/87				
Be analysis 30074-3030, 6010				
XZ0225EE1 < 0.50 ppm				
XZ0225EE2 < 0.50 ppm				
XZ0226EE1 < 0.50 ppm				
XZ0226EE2 < 0.50 ppm				
XZ0226EE3 < 0.50 ppm				
XZ0226EE4 < 0.50 ppm				
PO Xighthouse				
2325-199				
3/10/87				
PCB analyses, EPA Method 606				
XZ0225EE1 < 1.0 mg/l detection limit				
XZ0225EE2 < 1.0 mg/l detection limit				
XZ0226EE1 < 1.0 mg/l detection limit				
XZ0226EE2 < 1.0 mg/l detection limit				
XZ0226EE3 < 1.0 mg/l detection limit				
XZ0226EE4 < 1.0 mg/l detection limit				
MATH PROG. CONTROL				
3/16/87				
COMMENTS				INFO ONLY
				X
				TO SPEC
				NOT TO SPEC
				NCR NO.
PREPARED BY	DATE	APPROVED BY	DATE	
E. K. G. (Signature)	3/16/87	(Signature)	3-17-87	
RESPONSIBLE LABORATORY	ORGN.	BLDG.	FACILITY	EXTENSION
EOL	4891	1953	1	63303

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 405
Issue Date: 4-7-87
Revision Date: 7-6-87
Revision No. 1
Written By: *Jerry T. [Signature]*
Approved By: *[Signature]*

HAZARDOUS WASTE DISPOSAL

GENERAL

The disposal of hazardous wastes to off-site facilities for treatment, recycle, destruction, or disposal must be done in accordance with all applicable requirements and regulations governing such activity. The following procedure covers LMSC requirements in the disposal of hazardous wastes from Facility 1.

The requirements and regulations cover the following areas:

1. Shipping Papers
2. Labeling
3. Identification of Hazardous Wastes

ALL HAZARDOUS WASTES MUST BE DISPOSED OF WITHIN 90 DAYS OF THE DATE OF FIRST ACCUMULATION IN ACCORDANCE WITH CAC TITLE 22.

PROCEDURE

SHIPPING PAPERS

1. Each shipment of hazardous waste from Facility 1 must be accompanied by a UNIFORM HAZARDOUS WASTE MANIFEST (EPA form 8700-22, current revision, exhibit attached) The following information must be filled in on the form by the generator (LMSC):
 1. Generator's US EPA Number (for LMSC Facility 1, the number is CAD009125535)
Manifest Document Number
 2. Number of pages of the manifest (Additional sheets are EPA Form 8700-22A, current revision).
 3. Generators Name and Mailing Address
 4. Generators Telephone Number
 5. Transporters Company Name
 6. Transporters US EPA ID Number
 7. Transporters Company Name (If more than one)
 8. Transporters US EPA ID Number (If more than one)
 9. Designated Facility Name and Site Address
 10. Designated Facility US EPA ID Number
 11. US DOT Description (Including Proper Shipping Name, Hazard class, and ID Number)
 12. Containers (Number and Type)

13. Total Quantity
14. Unit Weight/Volume
15. Special Handling Instructions and Additional Information
16. Generators Certification (Printed and Signed Name, Date)

CERTIFICATION STATEMENT

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

2. Additional information on the UNIFORM HAZARDOUS WASTE MANIFEST required by the State of California must also be filled in:
 - A. State Manifest Document Number
 - B. State Board of Equalization Tax Code
 - C. State Transporter's ID
 - D. Transporter's Phone
 - E. State Transporter's ID (If more than one)
 - F. State Transporter's ID (If more than one)
 - G. State Facility's Phone
 - H. Facility's Phone
 - I. Waste Number
 - J. Additional Descriptions for Materials listed in Section 11
 - K. Handling Codes for Wastes listed in Section 11
3. The transporter must fill in the following information on the UNIFORM HAZARDOUS WASTE MANIFEST:
 17. Acknowledgment of receipt of materials (Printed and signed name, date)
 18. Same as above if more than one transporter.
4. The UNIFORM HAZARDOUS WASTE MANIFEST items above must be completed before the shipment leaves Facility 1.
5. The UNIFORM HAZARDOUS WASTE MANIFEST is a six part form.

Distribution of the copies is as follows:

- White Copy (1) - Disposal facility sends to DOHS within 30 days
- Blue Copy - Generator sends to DOHS within 30 days
- Yellow Copy (1) - Disposal facility sends to Generator within 30 days
- Yellow Copy (2) - Generator retains
- Green Copy - Transporter retains
- White Copy (2) - Disposal Facility retains

5. Commercial paperwork (Bill of Lading, Receipt, etc.) must also be completed before the shipment leaves Facility 1.

LABELING

1. The requirements for the labeling of containers of hazardous waste going off-site for disposal are as follows:
 1. Each container must be marked with a label "HAZARDOUS WASTE -Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or U.S. Environmental Protection Agency."
 2. Each container must show the generator's name, address, and EPA ID Number.
 3. Each container must show the UNIFORM HAZARDOUS WASTE MANIFEST document number under which it is being shipped.
 4. Each container must show the proper DOT shipping name for the contents, including the UN# or NA#.
 5. Each container must show the starting date for first accumulation of the waste.
 6. Each container must show the EPA Waste number.
 7. Each container must be labeled with an appropriate hazard label for the hazard class.
 8. Each container must be consistent with the description on the UNIFORM HAZARDOUS WASTE MANIFEST under which it is being shipped.
2. The above requirements are met by affixing an LMSC HAZARDOUS WASTE label, completely filled out, on each drum, and affixing an appropriate hazard warning label adjacent to the HAZARDOUS WASTE label. Samples of the labels are attached as a part of this procedure.
3. If a shipment is to be made by tank truck, the truck must be properly placarded for the waste being hauled. Proper placards will be inventoried and offered to the transporter as needed; it is the generator's responsibility to assure proper placards are installed before the shipment leaves Facility 1.

IDENTIFICATION OF HAZARDOUS WASTES

1. Each container or bulk shipment of hazardous waste going off-site for disposal must be identified for the following:
 1. D.O.T. Proper Shipping Name

2. Hazard Classification

3. U.N. (United Nations) or N.A. (North America) ID number

2. Source document for the above information is 49 CFR 172.101, which is the basic compilation for hazardous waste determinations.

3. Determination of the identification information is made based on direct (label) information, knowledge of the generating process, laboratory analysis, or technical expertise from disposal contractors.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.
Generator's Name and Mailing Address				A. State Manifest Document Number 86350568	
4. Generator's Phone ()				B. State Generator's ID	
5. Transporter 1 Company Name		6. US EPA ID Number	C. State Transporter's ID		
7. Transporter 2 Company Name		8. US EPA ID Number	D. Transporter's Phone		
9. Designated Facility Name and Site Address		10. US EPA ID Number	E. State Transporter's ID		
			F. Transporter's Phone		
			G. State Facility's ID		
			H. Facility's Phone		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a.					
b.					
c.					
d.					
Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information					
<p>16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.</p> <p>Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.</p>					
Printed/Typed Name		Signature		Month Day Year	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name		Signature		Month Day Year	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name		Signature		Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					
Printed/Typed Name		Signature		Month Day Year	



OXIDIZER

SEE LINE 5
• 80 & F., CA 94000

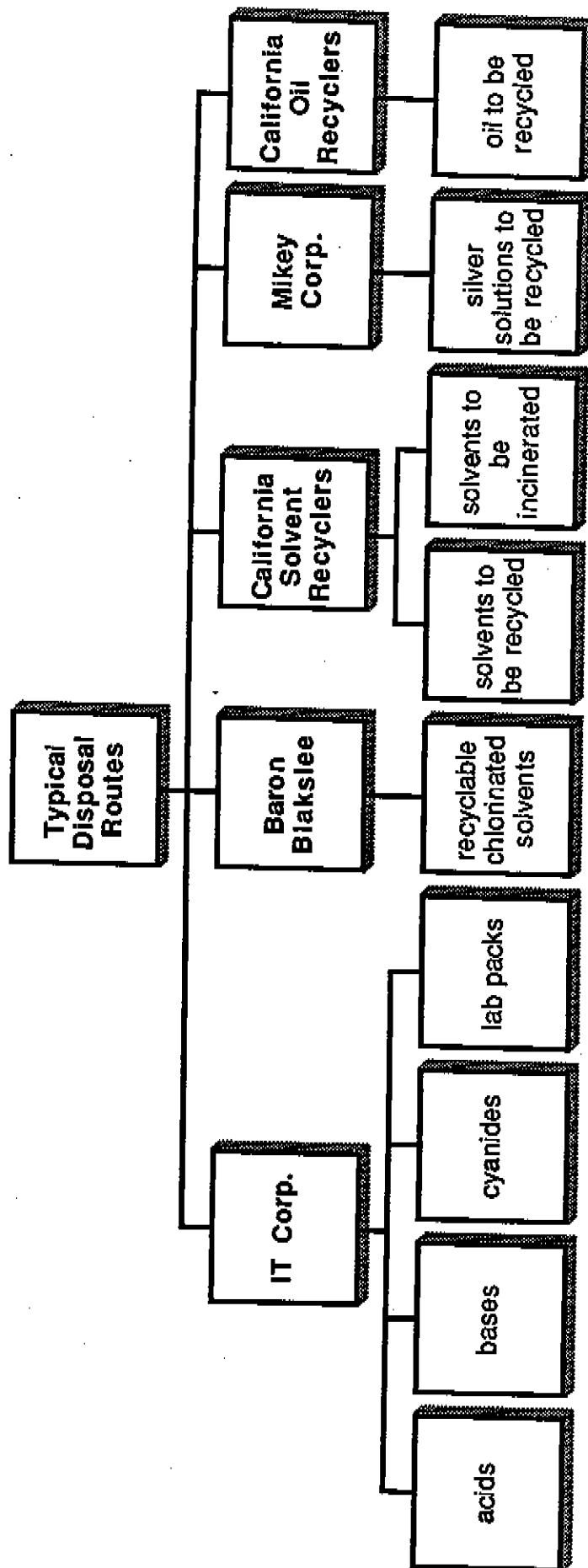
5



POISON

SEE LINE 5
• 80 & F., CA 94000





LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No. 406
Issue Date: 1-5-87
Revision Date: 4-7-87

Written By: *Angela Ford*
Approved By: *W. W. Willard*

CONTAINERIZED WASTE YARD INSPECTION PROCEDURE

GENERAL

The operation of the Containerized Hazardous Waste Holding Facility requires periodic, documented inspections of the facility, equipment, and containers in order to comply with all applicable regulatory requirements and to insure safe operation of the facility.

There are eleven segregated containment areas in the Containerized Hazardous Waste Facility. Each provides secondary containment for the maximum storage capacity of the area, each is sloped to the rear of the area to contain any leaks or spills, each has a small sump at the lowest point of the area, and each is of concrete construction coated with a chemically resistant coating. The permanent designation of each area is by letter, A through K. Each area also is designated, at any given time, for storage of a single category of hazardous waste; all wastes stored within a given area must be compatible. Designation of the type of hazardous waste stored in the area is shown by a sign at the rear of the area.

PROCEDURES

1. The inspections are to be conducted by Hazardous Waste Operations personnel at the frequency indicated on the designated forms (attached).
2. The inspector will indicate his/her full name (no initials), the time, and the date of the inspection. For each item on the forms, the inspector will refer to the "PROBLEMS TO LOOK FOR" lists and check to ensure that the condition of each item is satisfactory. If the condition of the item is satisfactory, the inspector will write "OK" in the column so provided. If the condition is unsatisfactory, note the deficiency in the right hand column "Deficiency/Date and Nature of Repairs". When the condition is remedied, write "C" for "corrected" in the column so provided, as well as indicating the date and nature of any repairs.
3. Any condition significantly endangering worker safety or the environment will be remedied immediately.
4. All inspection forms are to be filed in the Hazardous Waste

Operations office at B/131, and will be maintained for three years.

5. The above procedure covers the scheduled, documented inspection of the Containerized Hazardous Waste Yard. It is important to note that all of the above items, if observed to be deficient, should be corrected immediately when discovered in the normal course of operations; the inspection should not be the only time at which actions are taken.

FIRE DEPARTMENT ITEMS

The following items are inspected and records are maintained by Lockheed Fire Protection (O/27-27).

1. Fire Extinguishers (Monthly)
2. Fire Sprinklers and Alarms (Monthly)
3. Practice Drills (Twice Annually)

Records for the above are maintained by the Fire Department, O/27-27, at Building 141.

Copies of inspection records for B/175 and B/114 are appended. A copy of the startup inspection for the B/114 fire sprinkler system is appended, and copies of computerized test record for the system are also attached. B/114 system is designated as 3-34-00 (subsystems 3-34-01, 3-34-02, and 3-34-03).

A copy of the practice drill documentation for a drill simulating an acid spill at B/114 on October 23, 1986, is appended.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 406 A

Issue Date: 4-5-87

Revision Date:

Written By: *Royce Thompson*

Approved By: *AK Willard*

DAILY INSPECTION FORM/PROBLEMS TO LOOK FOR

FOR EACH CELL AREA AND THE PAVED AREA LOOK FOR SIGNS OF LEAKS AND SPILLS: WET SPOTS, POOLS OF LIQUID, LIQUID ON EXTERIOR OF DRUMS, LIQUID ON PALLETS, LIQUID ON SURFACE BETWEEN PALLETS OR BASKETS, LIQUID DRAINING TO GUTTERS OR SUMPS.

FOR EACH SUMP AND FOR THE TRENCH ON THE WEST END OF THE PAVED AREA CHECK THE SUMP LEVEL. THE LEVEL IS TOO HIGH IF ANY RAIN WATER TOUCHES THE BOTTOM OF THE GRATING. NOTE THAT ANY CHEMICAL SPILL TO THE SUMPS OR THE TRENCH MUST BE REMEDIED IMMEDIATELY, BY PUMPING THE ACCUMULATED SPILL AND WASHINGS INTO HAZARDOUS WASTE DRUMS; WASHING SHOULD CONTINUE UNTIL ABSENCE OF HAZARDOUS WASTE IS VERIFIED BY ANALYSIS. ONLY RAIN WATER MAY BE ALLOWED TO ACCUMULATE TO GRATE LEVEL.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Form No: 406 A

Issue Date: 4-1-87

Revision Date: _____

Written By: John Lee

Approved By: W. C. Ireland

DAILY INSPECTION FORM

INSPECTOR NAME _____ TIME _____ DATE _____

ITEM	OK?	DEFICIENCY/DATE AND NATURE OF REPAIRS
CELL A		
CELL B		
CELL C		
CELL D		
CELL E		
CELL F		
CELL G		
CELL H		
CELL I		
CELL J		
CELL K		
PAVED AREA		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 406 B
Issue Date: 4-5-87
Revision Date: 8-3-87
Revision No. 1

Written By: *[Signature]*

Approved By: *[Signature]*

FACILITY WEEKLY INSPECTION FORM/PROBLEMS TO LOOK FOR

ITEM	PROBLEMS TO LOOK FOR
ABSORBANT	FEWER THAN 10 BAGS OF VERMICULITE IN STOCK
DRUM LEAK SEALER	FEWER THAN 2 CONTAINERS OF SEALER IN STOCK
SHOWER/EYEWASH	PLUGGED ORIFICES, DIMINISHED FLOW, STICKY
#1	OR INOPERABLE VALVES OR HANDLES, BLOCKED
#2	ACCESS, LEAKS.
#3	"
#4	"
#5	"
#6	"
FIRST AID KIT	CONTAINERS LESS THAN 1/4 FULL: ASPIRIN, ANTACID, BANDAGES, EYE BUFFER, HF BURN SALTS, AMYL NITRITE
PERSONAL PROTECTIVE EQUIPMENT	
RESPIRATORS	SEE PROCEDURE 406 F.
GLOVES	EXCESSIVE WEAR? DAMAGE? FEWER THAN 10 PAIRS?
SUITS	FEWER THAN 15 CHEMICAL RESISTANT SUITS IN STOCK?
BOOTS	FEWER THAN ONE PAIR PER PERSON AVAILABLE? DAMAGED BOOTS?
EYE PROTECTION	FEWER THAN 1 PER PERSON AND 2 SPARES? DIRTY? DAMAGED?
TELEPHONE	INOPERABLE?
PUMP	INOPERABLE? DAMAGED?

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Form No: 406 B

Issue Date: 4-1-87

Revision Date:

Written By: *Aug. 1st*

Approved By: *W. C. Tillard*

FACILITY WEEKLY INSPECTION FORM

INSPECTOR NAME _____ TIME _____ DATE _____

ITEM	OK?	DEFICIENCY/DATE AND NATURE OF REPAIRS
ABSORBANT		
DRUM LEAK SEALER		
SHOWER/EYEWASH		
#1		
#2		
#3		
#4		
#5		
#6		
FIRST AID KIT		
PERSONAL PROTECTIVE EQUIPMENT		
RESPIRATORS		
GLOVES		
SUITS		
BOOTS		
EYE PROTECTION		
TELEPHONE		
PUMP		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 406 C
Issue Date: 4-5-87
Revision Date: 8-3-87
Revision No. 2

Written By: *[Signature]*

Approved By: *[Signature]*

CONTAINER WEEKLY INSPECTION FORM/PROBLEMS TO LOOK FOR

LEAKING CONTAINERS: LIQUID ON EXTERIOR OF DRUMS, LIQUID ON
PALLETS, LIQUID BETWEEN PALLETS ON FLOOR, LIQUID DRAINING TO
SUMPS.

DETERIORATING CONTAINERS: LEAKS (AS ABOVE), RUST, CORROSION,
CRACKS, SEVERE DENTS OR BULGES, BLISTERING OR PEELING PAINT.

PROTECTIVE COATING: CHIPS, CRACKS, BLISTERS, CHEMICAL DAMAGE.

FOUNDATIONS: CRACKS, EROSION, SETTLING.

aisle space: DRUMS OR PALLETS TOO CLOSE TO ALLOW INSPECTOR OR
EMERGENCY PERSONNEL TO GAIN ACCESS TO DRUMS. DRUMS OR PALLETS
BLOCKING THE SUMP.

LABELS: WARNING LABEL, INTERNAL HAZARDOUS WASTE MANIFEST,
HAZARDOUS WASTE LABEL, DATE OF FIRST ACCUMULATION, MISSING,
ILLEGIBLE, OR OBSCURED.

CLOSURES: BUNGS IN GOOD CONDITION AND FULLY SCREWED IN, OPEN TOP
DRUM LIDS SECURELY BOLTED.

SUMPS: SUMPS BELOW LEVEL OF GRATE. IF FULL, TEST AND DETERMINE
APPROPRIATE HANDLING METHOD OF DISPOSAL.

SEGREGATION: SEE PROCEDURE 406 E.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Form No. 406 C

Issue Date: 4-1-87

Revision Date: _____

Written By: John L. Lott

Approved By: J. K. Willard

CONTAINER WEEKLY INSPECTION FORM

INSPECTOR NAME _____ TIME _____ DATE _____

ITEM	OK?	DEFICIENCY/DATE AND NATURE OF REPAIRS
CELL A		
CELL B		
CELL C		
CELL D		
CELL E		
CELL F		
CELL G		
CELL H		
CELL I		
CELL J		
CELL K		
PAVED AREA		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 406 D

Issue Date: 4-1-87

Revision Date: _____

Written By: John J. [Signature]

Approved By: Bill [Signature]

MONTHLY INSPECTION FORM/PROBLEMS TO LOOK FOR

ITEM	PROBLEMS TO LOOK FOR
SALVAGE DRUMS	FEWER THAN FIVE 85 GALLON DRUMS IN STOCK
FENCE	DAMAGE, HOLES, MISSING BARBED WIRE.
GATES	DAMAGE, HOLES, MISSING OR DAMAGED LOCKS.
WARNING SIGNS	
FRONT FENCE	MISSING, DAMAGED WARNING SIGN, NFPA DIAMOND
SIDE FENCES	"
CELL A	MISSING, COVERED, DAMAGED: CELL LETTER, NFPA DIAMOND, WASTE TYPE, CONTAINMENT CAPACITY.
CELL B	"
CELL C	"
CELL D	"
CELL E	"
CELL F	"
CELL G	"
CELL H	"
CELL I	"
CELL J	"
CELL K	"

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Form No: 406 D

Issue Date: 4-1-87

Revision Date:

Written By: John F. [Signature]

Approved By: Mc [Signature]

MONTHLY INSPECTION FORM

INSPECTOR NAME _____ TIME _____ DATE _____

ITEM	OK?	DEFICIENCY/DATE AND NATURE OF REPAIRS
SALVAGE DRUMS		
FENCE		
GATES		
WARNING SIGNS FRONT FENCE		
SIDE FENCES		
CELL A		
CELL B		
CELL C		
CELL D		
CELL E		
CELL F		
CELL G		
CELL H		
CELL I		
CELL J		
CELL K		

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No. 406 E

Issue Date: 4-5-87

Revision Date:

Written By: *Roy H. Kopp*

Approved By: *AK Weller*

SEGREGATION OF CHEMICAL TYPES

1. Acids.

1. Segregate acids from incompatible non-acid wastes, such as bases (caustics), flammable, and organic materials.
2. Segregate strong oxidizing acids from strong organic acids.
3. Segregate acids from wastes which could generate dangerous fumes such as cyanides.
4. Note that chromic acid is an oxidizer, and should not be stored with acids.
5. When in doubt contact your supervision or the Lockheed Safety Program for guidance.

2. Bases (Caustics).

1. Segregate bases from acids.
2. Segregate bases from flammable and combustible wastes.
3. When in doubt contact your supervision or the Lockheed Safety Program for guidance.

3. Flammables and Combustibles.

1. Segregate flammables and combustibles from acids and oxidizers.
2. Store flammables only in areas equipped with proper partitions. (The two cells designated "E" and "F" at the West end of the facility are separated from the rest of the facility by a fire wall. Only these two cells may be used.) These partitions will prevent fires from liberating fumes from other materials such as cyanides.
3. When in doubt contact your supervision or the Lockheed Safety Program for guidance.

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS D/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No. 406 F

Issue Date: 4-5-87

Revision Date:

Written By: *Ronald Koppert*

Approved By: *AKW*

RESPIRATOR INSPECTION PROCEDURE

1. To ensure that the respirator is adjusted properly and that leaks around the edges of the face seal are not occurring, the following fit checks should be performed. If either test fails, the respirator should be readjusted on the face and both procedures repeated.
 1. While wearing the respirator, cover the exhalation valve and gently blow. The mask should "puff-up" slightly indicating that the exhaled air is being trapped in the mask and is not escaping around the edges of the face seal.
 2. While wearing the respirator, cover both inhalation valves and gently inhale. The mask should collapse slightly indicating that outside air is not entering the mask around the edges of the face seal.
2. Inspect the respirator for cleanliness. Look for dirt or contamination on the exterior and interior of the mask. If dirt or contamination is found, wash the respirator with warm soapy water and air dry.
3. Inspect the respirator for damage. Look for cracks, loose or broken straps, damaged fasteners.
4. If problems are found in any of the above procedures, report to the Occupational Safety & Health office for a qualitative fit test or a new respirator.

FIRE EXTINGUISHER RECORD

GROUP 3 BOOK 10-B

BLDG.	FLOOR	LOCATION	HYDRO	HEAD	WT	KIND	NUMBER	LN
174	MEZZ	COL. F-3	8405			PWC	152937-L	01
174	1ST	COL. G-3 HALL	8404			PWC	153058-L	02
174	1ST	COMPUTER RM. S. SIDE	8401	15	1/4	5# CO-2	512346-H	03
174	1ST	COL. F-2	8201	17	1/2	5# CO-2	842004-L	04
174	1ST	COL. E-3	8405			PWC	586377-R	05
174	1ST	COL. E-2 HOSE CAB.	8405			PWC	152932-L	06
174	MEZZ	EQUIPMENT ROOM	8411			PWC	150347-N	07
174	MEZZ	EQUIPMENT ROOM	8405	46	1/4	15# CO-2	171396-H	08
174	ROOF	ROOF	8409			PWC	426205-R	09
174	1ST	COL. F-1	83			5# ABC	923968-EP	10
174	1ST	HALL COL. E-1	8307			PWC	468422-N	11
174	1ST	COL. D-2	8404			PWC	468406-N	12
174	1ST	MIX ROOM COL. D-2	8409			PWC	586210-R	13
174	1ST	MIX ROOM COL. D-2	8308	41		15# CO-2	667874-G	14
174	MEZZ	MIX ROOM	8501			PWC	468443-N	15
174	1ST	COL. B-2	8206	29		10# CO-2	997479-L	16
174	1ST	COL. B-1	81			10# ABC	753407-DY	17
174	1ST	OVEN COL. A-3	81			10# ABC	590795-DS	18
174	1ST	COL. A-3	8506	38	3/4	15# CO-2	321627-G	19
174	1ST	N.W. OF COL. C-3	8409			PWC	152927-L	20
174	MEZZ	COL. C-3	8305	18	1/2	5# CO-2	214504-H	21
174	1ST	COL. B-4 COMPUTER ROOM	8401	33	1/2	10# CO-2	95457-M	22
174	O.S.	MAINT. AREA N.W. SEC.	85			10# ABC	937291-FR	23
174	1ST	MAINT. AREA N.W. SEC.	8404			PWC	922795-M	24
174	1ST	N.W. CORNER OFFICE	8308	33		10# CO-2	95540-M	25
174	1ST	KILN AREA W. SIDE BLDG.	8308	33	1/2	10# CO-2	95502-M	26
174	1ST	KILN AREA W. SIDE BLDG.	8401	34	1/2	10# CO-2	94597-M	27
174	1ST	COL. E-4	8201			10# G.DC	32420-F	28
174	1ST	COL. E-4 HALL	8406			PWC	428320-M	29
174	1ST	S.W. CORNER	8201	16	1/4	5# CO-2	435715-J	30
174	MEZZ	SOUTH	8404			PWC	294452-K	31
174	MEZZ	NORTH	8405			PWC	586382-R	32
174	1ST	COL. E-5	8404			PWC	153197-L	33
174	O.S.	CONST. TRAILER #117	8409			PWC	294538-K	34
174	O.S.	E. SIDE BY GEN.	8112			20# G.DC	127020-S	35
174	O.S.	SAW RM. N. SIDE OF BLDG.	8405	38	1/2	15# CO-2	321865-G	36
175	1ST	BUILDING 175	83			5# ABC	923920-EP	37
174	1ST	SPRAY BOOTH	83			5# ABC	120984-EX	38
174	1ST	COL. C-3	83			5# ABC	098997-EX	39

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Records
Completed
9-86

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04/01/87

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FIRE EXTINGUISHER RECORD

GROUP 3 BOOK 10-A

BLDG.	FLOOR	LOCATION	HYDRO	HEAD	WT	KIND	NUMBER	LN
159	2ND	REPRO	8208	18	1/4	5# CO-2	214538-H	01
159	MEZZ	COL. B-7	8404			5# ABC	219071-EW	02
159	2ND	COL. A-2 MEZZ.	82			9 1/2# ABC	448133-EL	03
159	2ND	2ND FLOOR	81			9 1/2# ABC	590799-DS	04
159	MEZZ	COL. B-5 MEZZ	83			5# ABC	219121-EW	05
159	2ND	B/159 2ND FLOOR	8211			10# ABC	497234-AL	07
159	2ND	EXEC. AREA MEZZ.	82			9 1/2# ABC	465365-EL	08
159	2ND	CADAM ROOM	8303	39		15# CO-2	499370-G	09
159	ROOF	FAN HOUSE 1	8206			20# G.DC	127024-S	10
159	ROOF	FAN HOUSE 5	8606			20# G.DC	323089-E	11
159	ROOF	HIGH SEC. S. END OVER MILL	8206			20# G.DC	654938-N	12
159	MEZZ	TELEPHONE EQUIP. ROOM	8603	15	3/4	5# CO-2	737319-H	13
174	1ST	COL. F-3	8312	33	1/2	10# CO-2	154538-K	14
74	1ST	COL. F-3	8312	33		10# CO-2	95504-M	15
	1ST	HALL COL. E-4	82			10# ABC	448134-EL	16
1.	O.S.	N.E. FENCE	8103			30# ANSUL	592618-A	17
114	O.S.	S.W. FENCE	8103			30# ANSUL	588929-E	18
114	1ST	SS.E. FENCE	8105			30# ANSUL	588903-E	19
114	O.S.	N.W. FENCE	8105			30# ANSUL	362933-B	20

B/114
UNIMODE LOCATED IN B/17

COMMUNICATION CONCENTRATOR ADDRESS: CCC 3 PA 0 SA 34
SYSTEM (DDATA) ADDRESS: CHN 3 RTU 34
CHANNEL TYPE: (AC, DC) INPUT MODULE TYPE: (A,B,A/B)
AUTOTERM LOCATION: 3 34 00

ZONE DESCRIPTION	POINT OR ZONE #	DDATA PROMPTS									
		DEVICE CODE & MNEM	MATRIX #	STATUS	MAINT?	SERVICE?	PRIOR. TYPE	STATUS TYPE CODES & MNEM	SLIDE #	RELAY #	AUTO SEQ #
POWER	1	76 POWER	1	1	1	1	2	11 PDRM	2	8	1
WATER FLOW	2	10 WFLOW	1	1	1	1	1	5 PSTRD	2	8	1
UNIMODE SYSTEM TROUBLE	3	9 SV+TBL	1	1	1	1	3	3 NORMC	2	8	1
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
	13										
	14										
	15										
	16										

COMMAND OUTPUTS:

PNT/MNEM	1/	2/	3/	4/
CNT CONTROLLED				
PNT/MNEM	5/	6/	7/	8/
CNT CONTROLLED				

ACK RSTRD->	3-13-08	SMOKE	11:44:04	DEC 10 1986	
ACK RSTRD->	3-13-10	SMOKE	11:44:05	DEC 10 1986	
ACK NRMAL->	3-13-11	SYTBL	11:44:07	DEC 10 1986	
***** TRBLE->	3-34-00	CM-02 2	11:52:12	DEC 10 1986	*****
ACK.... TRBLE->	3-34-00	CM-02 2	11:52:15	DEC 10 1986	
***** OFF->	3-34-01	POWER 2	13:59:38	DEC 10 1986	*****
***** TRBLE->	3-34-03	SYTBL 3	13:59:38	DEC 10 1986	*****
ACK.... OFF->	3-34-01	POWER 2	13:59:42	DEC 10 1986	
ACK.... TRBLE->	3-34-03	SYTBL 3	13:59:45	DEC 10 1986	
NRMAL->	3-34-00	CM-00	14:01:31	DEC 10 1986	
ACK NRMAL->	3-34-00	CM-00	14:01:33	DEC 10 1986	
ON->	3-34-01	POWER	14:01:45	DEC 10 1986	
NRMAL->	3-34-03	SYTBL	14:01:45	DEC 10 1986	
ACK ON->	3-34-01	POWER	14:01:49	DEC 10 1986	
ACK NRMAL->	3-34-03	SYTBL	14:01:54	DEC 10 1986	
***** TRBLE->	3-34-03	SYTBL 3	14:02:57	DEC 10 1986	*****
ACK.... TRBLE->	3-34-03	SYTBL 3	14:03:00	DEC 10 1986	
***** ALARM->	3-34-02	WFLOW 1	14:05:18	DEC 10 1986	*****
ACK.... ALARM->	3-34-02	WFLOW 1	14:05:26	DEC 10 1986	
***** ALARM->	3-35-03	SMOKE 1	14:06:28	DEC 10 1986	*****
ACK.... ALARM->	3-35-03	SMOKE 1	14:06:40	DEC 10 1986	
RSTRD->	3-34-02	WFLOW	14:08:07	DEC 10 1986	
NRMAL->	3-34-03	SYTBL	14:08:07	DEC 10 1986	

ACK NRML->	3-34-03	SYTBL	14:08:20	DEC 10 1986	
***** ALARM->	3-34-02	WFLOW 1	14:09:19	DEC 10 1986	*****
***** TRBLE->	3-34-03	SYTBL 3	14:09:19	DEC 10 1986	*****
ACK.... ALARM->	3-34-02	WFLOW 1	14:09:22	DEC 10 1986	
ACK.... TRBLE->	3-34-03	SYTBL 3	14:09:25	DEC 10 1986	
RSTRD->	3-35-03	SMOKE	14:10:01	DEC 10 1986	
ACK RSTRD->	3-35-03	SMOKE	14:10:04	DEC 10 1986	
***** TRBLE->	3-34-00	CM-02 2	14:12:57	DEC 10 1986	*****
ACK.... TRBLE->	3-34-00	CM-02 2	14:13:00	DEC 10 1986	
***** OFF->	3-34-01	POWER 2	14:22:00	DEC 10 1986	*****
RSTRD->	3-34-02	WFLOW	14:22:00	DEC 10 1986	
.... OFF->	3-34-01	POWER 2	14:22:04	DEC 10 1986	
ACK RSTRD->	3-34-02	WFLOW	14:22:08	DEC 10 1986	
***** ALARM->	3-34-02	WFLOW 1	14:22:56	DEC 10 1986	*****
ACK.... ALARM->	3-34-02	WFLOW 1	14:23:00	DEC 10 1986	
NRML->	3-34-00	CM-00	14:24:06	DEC 10 1986	
ACK NRML->	3-34-00	CM-00	14:24:09	DEC 10 1986	
ON->	3-34-01	POWER	14:26:13	DEC 10 1986	
RSTRD->	3-34-02	WFLOW	14:26:13	DEC 10 1986	
NRML->	3-34-03	SYTBL	14:26:13	DEC 10 1986	
ACK ON->	3-34-01	POWER	14:26:15	DEC 10 1986	
ACK RSTRD->	3-34-02	WFLOW	14:26:17	DEC 10 1986	
ACK NRML->	3-34-03	SYTBL	14:26:20	DEC 10 1986	

ACK.... ALARM->	3-34-02 WFLOW 1 14:27:03 DEC 10 1986
***** TRBLE->	3-34-00 CM-02 2 14:28:26 DEC 10 1986 *****
ACK.... TRBLE->	3-34-00 CM-02 2 14:28:29 DEC 10 1986
***** OFF->	3-34-01 POWER 2 14:34:06 DEC 10 1986 *****
RSTRD->	3-34-02 WFLOW 14:34:06 DEC 10 1986
***** TRBLE->	3-34-03 SYTBL 3 14:34:06 DEC 10 1986 *****
ACK.... OFF->	3-34-01 POWER 2 14:34:11 DEC 10 1986
ACK.... TRBLE->	3-34-03 SYTBL 3 14:34:13 DEC 10 1986
ACK RSTRD->	3-34-02 WFLOW 14:34:15 DEC 10 1986
***** ALARM->	3-35-03 SMOKE 1 14:34:20 DEC 10 1986 *****
ACK.... ALARM->	3-35-03 SMOKE 1 14:34:22 DEC 10 1986
NRMAL->	3-34-00 CM-00 14:35:59 DEC 10 1986
ACK NRMAL->	3-34-00 CM-00 14:36:03 DEC 10 1986
ON->	3-34-01 POWER 14:36:14 DEC 10 1986
NRMAL->	3-34-03 SYTBL 14:36:14 DEC 10 1986
ACK ON->	3-34-01 POWER 14:36:16 DEC 10 1986
ACK NRMAL->	3-34-03 SYTBL 14:36:18 DEC 10 1986
RSTRD->	3-35-03 SMOKE 14:36:56 DEC 10 1986
ACK RSTRD->	3-35-03 SMOKE 14:36:59 DEC 10 1986
***** ALARM->	3-34-02 WFLOW 1 14:37:25 DEC 10 1986 *****
ACK.... ALARM->	3-34-02 WFLOW 1 14:37:39 DEC 10 1986
***** TRBLE->	3-34-00 CM-02 2 14:38:14 DEC 10 1986 *****

INSTRUCTOR: Capt J.L. Miller / Al Stankum DATE: 23 OCT 86 MANHOURS: 6

TRAINING CONDUCTED:

Hazardous Materials
Exercise at Bldg 114

TRAINING AIDS USED:

- Bldg 114 Reclamation yard / and equipment
- Haz Mat 1 and equipment
- Engine 1 and equipment
- Command 1 and equipment

DESCRIPTION OF TRAINING SESSION:

An exercise was conducted at B/114, simulating a waste acid spill from 55 gallon drums. This exercise involved Fire Department and LMSC Safety personnel in practice for response procedures and applications.

Command Post operations were practiced; Haz Mat personnel and equipment were utilized for contained operations. Back-up fire response personnel were utilized from Engine 1 crews, and Safety personnel (over)

PERSONNEL RECEIVING TRAINING:

✓ MAHARINE

✓ P. P. Dunder

✓ R. E. Borden

✓ Bill Miller

✓ MOORE JEN

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No: 407
Issue Date: 4-1-87

Revision Date:

Written By: *Jimmy L. L...*

Approved By: *W. L. L...*

HAZARDOUS WASTE TRANSPORTATION INSTRUCTIONS

GENERAL

Transport of hazardous materials within Facility 1 is the responsibility of Transportation and Traffic, 0/41-40. The following procedures must be followed in the transport of containerized hazardous wastes from the generating points in Facility 1 to the Containerized Hazardous Waste Holding Facility at B/114.

PROCEDURES

1. Containerized hazardous wastes shall be transported to B/114 only during normal weekday working hours, 7:00 AM to 4:30 PM, unless prior arrangements are made with Hazardous Waste Operations 0/47-30. Contact telephone numbers are Ext. 2-1394 or Ext. 3-7249.
2. When Transportation is notified that a shipment of containerized waste is to be moved to B/114, the person making the move shall check each container to determine the following:
 - a. Each container has the following identification items visible:
 - (1) Properly filled in "Ship To" tag. (FORM LMSC 3080-2)
 - (2) Warning label for the hazardous waste category of the contents of the container. (Available from Hazardous Waste Operations, 0/47-30, or Occupational Safety, 0/47-20)
 - (3) Permanent stencil showing drum type and serial number.
 - (4) Plastic envelope containing INTERNAL HAZARDOUS WASTE MANIFEST. (LMSC FORM 5991-1)
 - b. Each container is tightly sealed, with bungs installed and tightened.
 - c. None of the containers is leaking; no visible sign of spills or stains on the container.
 - d. All containers are safely secured on the pallet to prevent tipping.
 - e. Each category of waste material must be on a separate pallet. Combinations of materials, such as acids and bases on the same pallet, are prohibited.

NOTE: ANY DEVIATIONS FROM THE ABOVE LIST SHALL BE SUFFICIENT CAUSE NOT TO TRANSPORT THE CONTAINER. THE GENERATOR SHOULD BE NOTIFIED OF DEFICIENCIES; IF THE CONTAINER IS LEAKING, THE FIRE DEPARTMENT SHOULD BE NOTIFIED IMMEDIATELY AT TELEPHONE NUMBER 117.

3. During transport to B/114, all necessary precautions shall be taken to prevent spills, tipping containers, etc.

Note: IF, UNDER ANY CIRCUMSTANCES, MATERIAL IS RELEASED FROM A CONTAINER BEING TRANSPORTED, CALL 117 IMMEDIATELY. NO ATTEMPT SHOULD BE MADE TO HANDLE THE SPILL WITHOUT QUALIFIED ASSISTANCE, EXCEPT TO LIMIT LEAKAGE OR THE EXTENT OF THE SPILL IF IT CAN BE SAFELY DONE.

4. Shipments received at B/114 must be off-loaded in the location directed by Hazardous Waste Operations personnel.

PICK-UP REQUEST CHECK LIST

Dial Extension 23011. Give "Dispatch" the following info:

1. REQUESTOR Name, organization, extension
2. PICK UP FROM Building, column, contact, orgn., phone
3. DELIVER TO Building, column, contact, orgn., phone
4. DESCRIPTION (examples; tool on pallet, console on wheels)
5. WEIGHT & DIMENSIONS (Approximate)
6. REMARKS (examples; classified hardware*, explosives*, fragile)

NOTE: A Storage Request, MDA, TD or SOD must accompany items sent to the WAREHOUSE (Bldg. 514) for storage or disposition.

Property Transfer Cards must accompany TAGGED PROPERTY.

*Contact "Shipping" Ext. 20B70 about transportation of EXPLOSIVES, CLASSIFIED, and shipments to other than LMSC Facilities 1, 2, 4, 5 & 6.

5030-2

To

BUILDING	FACILITY	COLUMN or ROOM	ORGN.
101	1	B-6	11-12
FOR (Person's Name)		PHONE	DATE NEEDED
Bob Smith-12345		ASAP	

Material will be picked up only if this tag is completely filled out.

From

BUILDING	FACILITY	COLUMN or ROOM	ORGN.
114	1	NONE	47-30

Sender must prepare the item(s) for transportation. The Sender will be held responsible for damage to property or injury to personnel resulting from improper preparation.

SENT BY (Sender's Name)	PHONE	DATE PREPARED
Royal Kopperud	37249	3-30-87

SPECIAL INFORMATION

READ THE INSTRUCTIONS
on the back of this tag

INTERNAL

HAZARDOUS WASTE

MANIFEST

THIS FORM MUST REMAIN WITH DRUM AT ALL TIMES
(Print firmly & legibly using ball-point type pen)

REQUESTER/GENERATOR:

NAME	DRUM NO.	ISSUE DATE:	ORGAN.	B.L.O.	PHONE NO.
------	----------	-------------	--------	--------	-----------

USER SIGNATURE:

QUANTITY	DRUM SER. NO.	PHYSICAL STATE
----------	---------------	----------------

<input type="checkbox"/> SOLID	<input type="checkbox"/> LIQUID	<input type="checkbox"/> GASEOUS
--------------------------------	---------------------------------	----------------------------------

<input type="checkbox"/> ACIDS	<input type="checkbox"/> BASES	<input type="checkbox"/> CYANIDE	<input type="checkbox"/> OILS	<input type="checkbox"/> FLAMMABLE SOLVENTS	<input type="checkbox"/> NON-FLAM. SOLVENTS	<input type="checkbox"/> REACTIVE	<input type="checkbox"/> OXIDIZER
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<input type="checkbox"/> PRECIOUS METALS	<input type="checkbox"/> COOLANT CONCENTRATIONS	EP&S NO.
--	---	----------

COMPONENTS	UPPER	LOWER	PPM	OR	PERCENTAGE	EP&S NO.
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1.						
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2.						
----	--	--	--	--	--	--

3.						
----	--	--	--	--	--	--

4.						
----	--	--	--	--	--	--

COMMENTS:	
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THIS CONTAINER MUST BE RETURNED BY:

TO: B/114 (0147-30)
WASTE CONTROL OPERATIONS

FORM 144C (REV. 1)

WHITE—ISSUE

PINK—RETURN

YELLOW—LAB

GREEN—(0147-30 FILE)

GOLD—REQUESTER

WASTE SOLVENTS

DANGER!

Flammable

Vapor Harmful

Keep away from sources of ignition.
Use only with adequate ventilation.
Avoid breathing vapor.
Avoid contact with skin and eyes.

FIRST AID

IF SWALLOWED: DO NOT induce vomiting. Immediately call a physician.
IF CONTACTED: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Wash skin. (Wash clothing before re-use).
IF INHALED: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing difficult, give oxygen. Call a physician.

HCL

To

DATE	QUANTITY	DATE
1/1/80	1000 LBS	1/1/80

From

DATE	QUANTITY	DATE
1/1/80	1000 LBS	1/1/80

Material will be picked up only if this tag is completely filled out.

Sender must prepare the item(s) for transportation. The Sender will be held responsible for damage to property or injury to personnel resulting from improper preparation.

DO NOT REUSE THIS TAG

SPECIAL INFORMATION

READ THE INSTRUCTIONS
on the back of this tag

LOCKHEED MISSILES & SPACE COMPANY
HAZARDOUS WASTE OPERATIONS 0/47-30
CONTAINERIZED WASTE FACILITY
OPERATING PROCEDURE

Procedure No. 408
Issue Date: 4-7-87
Revision Date: 7-10-87
Revision No. 1
Written By: *[Signature]*
Approved By: *[Signature]*

MISCELLANEOUS WASTES PROCEDURE

GENERAL

The waste stream from LMSC's Facility 1 includes a wide variety of items which require evaluation before a determination can be made as to the method of disposal. Not all of these items are classified as hazardous wastes. The following is a list of typical materials found in the waste stream:

1. Obsolete and surplus packaged chemicals, adhesives, paints, and similar materials.
2. Empty paint cans
3. Aerosol cans
4. Empty glass and plastic containers
5. Rags, filters, and wipes
6. Powders and solids

These items require sorting into the following categories for disposition or disposal:

1. Items which can be used for other purposes
2. Items which can be sold as surplus
3. Non-hazardous items which can be discarded as trash
4. Items which must be disposed of as hazardous waste

Materials which are not controlled by use of the LMSC HAZARDOUS WASTE MANIFEST (Procedure 401) or tracked in the HAZARDOUS WASTE DRUM CONTROL SYSTEM (Procedure 402), should be handled in accordance with the following procedures:

PROCEDURE

1. CONTROLLED DRUMS

For any hazardous waste, solid or liquid, which is accumulated over a period of time at the point of generation, hazardous waste drums should be requested from Hazardous Waste Operations as per the procedure LMSC INTERNAL HAZARDOUS WASTE MANIFEST (Procedure No. 402). All provisions of that procedure must be followed. Typical waste items in the miscellaneous category which should use the drum system are:

1. Oil rags and wipes
2. Absorbants used to clean up spills
3. Powders or solids out of original packaging with no further useful application

4. Contaminated soils, clothing, or other material.

IF THERE IS ANY QUESTION THAT A MATERIAL IS HAZARDOUS OR NON-HAZARDOUS, IT MUST BE TREATED AS HAZARDOUS AND ALL APPLICABLE PROCEDURES AND PRECAUTIONS MUST BE FOLLOWED. AVAILABLE RESOURCES SUCH AS LABEL INFORMATION, MSD DATA SHEETS, AND INFORMATION FROM 0/47-10 ENVIRONMENTAL PROTECTION, 0/47-20 HAZARDOUS MATERIALS CONTROL, OR 0/47-30 HAZARDOUS MATERIAL OPERATIONS SHOULD BE UTILIZED IN IDENTIFYING AND CLASSIFYING THE MATERIAL PROPERLY.

2. SORT MATERIALS

Currently, surplus or obsolete packaged items, empty containers, aerosol cans, and similar materials are collected in wire transport baskets. These items require sorting to determine ultimate disposition or disposal. The following procedures should be followed in handling these materials

1. If an item can clearly be identified as non-hazardous, it may be disposed of as regular trash, and not collected in the wire transport basket.
2. Items collected in the wire transport baskets must be inspected to assure there are no leakage of either liquid or solid. Appropriate additional packaging should be utilized if required (plastic bags, cardboard box, etc.)

Items must be segregated by type in different baskets; noncompatible items (e.g. acids and bases) may not be collected in the same basket.

3. All items placed in the wire transport baskets must be clearly identified by labeling, either by label on the original container, or a label filled out by the generator.
4. An INTERNAL SORTING MATERIAL MANIFEST has been developed for use with the miscellaneous items collected in wire baskets. This manifest, which is different from the INTERNAL HAZARDOUS WASTE MANIFEST, contains the information necessary for identification when the miscellaneous materials are sorted by Hazardous Waste Operations at B/114 (or B/137). The manifest forms and accompanying generator instructions will be implemented by August 31, 1987. The INTERNAL SORTING MATERIAL MANIFEST, properly filled in, must accompany all shipments of miscellaneous sorting materials to B/114 and B/137.
5. The properly manifested wire transport basket should be tagged with a shipment tag LMSC FORM 5080-2, and Transportation notified to transport the wire basket to B/114.

(Note: Following completion of the construction of

facilities for sorting at B/137, scheduled for September 1, 1987, the wire transport baskets will be sent to B/137, not B/114.)

6. At B/114, the wire baskets will be placed in a segregated SORT area. The contents of the baskets will be segregated into the following categories and proper disposition or disposal made:

1. Items which can be discarded as trash

Items which can clearly be identified as trash will be disposed of in the regular trash bins. Typical items will be cardboard, lids, and empty containers.

2. Items which have potential sales or alternate use value

These items are normally in original packages, and are either surplus to the generator, or are discarded due to being over the listed shelf life period. Material Sales, O/41-20, will be responsible for arranging for display and bidding for these items, and for investigating alternate uses within LMSC Facility 1.

(Note: The sales/display activity is currently being conducted in B/176. With the completion of the B/137 project, the activity will be transferred to that area.)

3. Items identified as hazardous wastes

Items not fitting the above categories will be disposed of as hazardous wastes.

1. The wastes will be identified for all of the parameters needed for proper disposal. See HAZARDOUS WASTE IDENTIFICATION (Procedure No. 404) and HAZARDOUS WASTE DISPOSAL (Procedure No. 405).
2. The wastes will either be lab packed or combined with wastes of the same classification for disposal.
3. Disposal will be in accordance with the procedures in Item 1 above.

3. RED CANS

Small Solvent Cans (Red Cans) are used for the accumulation of small quantities of solvents in laboratories and some other locations. The generator (user) of the Red Cans is responsible for all labeling of the cans and, in particular, maintaining labeling to show date of first accumulation and all subsequent additions to the cans. See HAZARDOUS WASTE DRUM INSPECTION AND LABELING, Procedure No. 403.

The Red Cans will be transported to B/114 using a copy of the INTERNAL HAZARDOUS WASTE MANIFEST and the shipping tag described in Items 2.4 and 2.5 above.

IT IS THE RESPONSIBILITY OF THE GENERATOR TO SEND THE RED CANS TO HAZARDOUS WASTE OPERATIONS AT B/114 WITHIN 30 DAYS OF THE DATE OF FIRST ACCUMULATION.

At B/114, the solvents contained in the Red Cans will be combined with solvents of the same classification for disposal.

4. GASEOUS HAZARDOUS WASTES

All high pressure, compressed gas cylinders within LMSC Facility 1 are returned to the vendor. Residual gases in the original container are considered unused material, not waste. The inadvertent release of gases does not result in a collectable or containable hazardous waste.

From the above, no procedures for handling or disposing of hazardous gaseous wastes are possible or required.